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COMPUTER WEEKLY

# 'Crusade against computers in the Civil Service'—Tory MP

**THE Government is coming under increasing pressure from MPs on both sides of the Commons to give greater recognition to the UK computer industry.**

**Conservative MP Kenneth Warren has accused the Department of Industry of being slow to promote the development of computers, and Labour MP Eric Moonman has described studies of the industry as "a lot of liquorice allsorts which don't add up to a sensible strategy."**

**In an exchange in the Commons with the Civil Service Minister, Charles Morris, Warren said, "May I ask the Minister whether he has noticed that there seems to be a crusade against computers in many areas of the Civil Service? Will he try to get a move on with the introduction of computer services on a wider scale, and will he consult his colleagues in the Department of Industry to discover why that department is so dilatory in promoting the development of computers which the government could use?"**

**Morris denied that there was a Civil Service campaign against the computer industry and said he did not accept that the department was unmindful of the problems facing the computer industry.**

**Moonman pressed the Industry Under-Secretary Bob Cryer for a preliminary statement on a strategy for the UK computer industry for the next five years.**

**Moonman said afterwards that he was not satisfied with Cryer's answer that there was general agreement that peripherals and hardware would continue to increase in importance and that there would be growing emphasis on expertise in computer applications and systems software.**

**Referring to the NEDC working party on the computer industry, Cryer added, "Discussions are continuing on the specific actions which should be taken to reflect these findings."**

*Civil Service Minister Charles Morris . . denial of a Civil Service campaign against the computer industry.*

## NEWS IN BRIEF

### China voices concern to IBM chief

THE IBM delegation to China, led by chairman and chief executive Frank Cary (CW, November 3) stopped off in Hong Kong and is believed to have discussed automation plans with the subsidiaries there of the Peoples' Bank of China. Business with the Hong Kong branches is seen as a possible entree to the bank's 15,000 branches on the mainland.

Cary is reported to have said that the Chinese expressed concern over the operation of Co-Com, which vets computer sales to Communist countries. In France, CoCom is reported to have blocked the sale of three large Hitachi M-series mainframes to China

### Improved 7.760

SIEMENS has improved the performance of its top-of-the-line 7.760 by about 10%. The 7.000 series mainframe consoles can now be fitted with floppy discs. Its line of disc drives has also been enhanced and a 300 Megabyte exchangeable disc unit has been introduced.

### Euro HQ

A NEW European headquarters is to be established in London by the Pertec Microprocessor Division, manufacturers of the Altair microcomputer system. The office, which will provide support for Altair sales outlets, is scheduled to open in the new year.

### Personal pay-up

OVER 500 people on Saturday attended a seminar introducing the Nascom I personal computer kit. And 60 of them paid out the £197.50 asking price there and then.

# ASTMS wants say in NCR sales policy

By Robin Webster

A CALL for ASTMS members at NCR to have a say in the development of the company's sales policy is one of 13 points that the union has put to the company. Other demands include a 15.6% wage increase, revised London weighting, and a 35-hour week.

Despite the fact that most financial analysts regard NCR as one of the most buoyant companies in the computer business, having successfully made the transition from mechanical accounting machines to electronic systems (CW, September 8) ASTMS is concerned that the company's sales strategy "lacks coherence."

NCR would not comment on the situation other than saying that it will respond to the claim on December 15.

Other demands made by ASTMS are for alterations to the method for paying bonuses, commission of 10% on money collected by field engineers, a minimum holiday period of five weeks, and training for electromechanical field engineers who wish to be electronic engineers.

Representing about 700 field engineers at NCR, ASTMS has also submitted a Section 11 reference to the Advisory, Conciliation and Arbitration Service seeking to extend its collective bargaining rights to all grades of NCR staff rather than just the engineers.

Section 11 is a request for an employer to recognise a union as the bargaining body.

This would open the door to management, sales, clerical and data processing staff to become ASTMS members and to have their pay and conditions negotiated by the union.

## DEC machine meets Trent Poly budget

BECAUSE a proposed ICL 2960 was outside the budget set by the local authority, it had to be rejected by Trent Polytechnic at Nottingham, in favour of a £400,000 Digital Equipment DECsystem 20.

This order is another sign of the trend in the higher education market away from mainframes. Last month Loughborough University placed a £262,000 order for two Prime 400s, and several other establishments are planning mini-based configurations to replace mainframe systems.

DEC has already done well in the educational market with all eight of the DECsystem 20s so far ordered in the UK going to colleges and universities. The Open University has three for its student computer service.

At Trent, an ICL 1905 is to be replaced by the DECsystem 20. The new machine will substantially enhance the interactive computing capability at the poly and also improve the service offered to many local schools and colleges. Since 1974 these services have been run on a now heavily overloaded PDP-11/40.

The polytechnic has 79 schools registered as users. About 10 of these will get online terminals.

## Brain drain protest

THE Civil Service is experiencing an "extensive drain" of programmers and analysts due to low pay levels, says Campbell Christie, deputy general secretary of the Society of Civil and Public Servants.

Currently there is a 20% annual turnover of software staff in the Civil Service.

"It is a very difficult situation," he said, "and unless something is done soon, The government will be in difficulty in this area."

This week the SCPS, which represents executive grade civil servants, and the Civil and Public Servants Association, which represents clerical grades are holding nationwide protest action against the government's failure to restart an independent pay research unit in time for 1978 pay negotiations (CW, October 20).

The actions taken will be left to local areas to decide and are likely to be irritating rather than involving any major stoppages.

The pay limit unit is to be operational in time to provide information for a 1979 pay settlement.

## Micros in the front line

VITAL battlefront data will soon be transmitted over radio, from a small hand-held data terminal, if the armed services accept a proposal put forward by Ferranti Digital Systems Division for FIST, the Field Intelligent Signal Terminal.

Developed by the division as a private venture proposal, Fist is based on the Ferranti F100-L microprocessor, and provides the front-line soldier with a numeric and function keyboard for data entry and a visual display for input data verification and message receipt.

It has been designed to operate with any standard military radio communication link, drawing power from the radio whether it be connected directly to it, or operating remotely over wandering leads.

## Racal former executives charged

AT THE Old Bailey last week, documents were produced which named Racal Electronics as having paid £250,000 to Sir Shapoor Reporter, a business consultant based in Teheran. The payments were for help over Iranian contracts. Racal chairman accepted that the documents were accurate, but said he was aware of only £80,000 of payments. Lt Colonel David Randell and two former Racal executives are on trial for alleged corruption and have denied being involved in passing money to favour Racal-BCC in a radio equipment contract.

## EEC study paves way to unified privacy law

STANDARD data protection legislation throughout Europe could result from an EEC study of privacy and security being carried out by the UK's National Computing Centre and its counterparts in Germany and France.

While the NCC is looking at security standards the Germans are considering legal aspects. Their plans for European legislation will be based largely on legislation in France and Germany, the only two EEC countries which so far have introduced data protection laws

An EEC directive, which would be binding on all EEC countries, is expected to be the outcome of the study. But the directive is likely to be aimed at countries which have no immediate plans for legislation and is not expected to affect to any great extent countries which have introduced laws.

By the time the study is complete, at the end of 1980, the UK will almost certainly be one of the countries to have introduced legislation.

The Data Protection Committee, which is drawing up recommendations on legislation in the UK, is expected to report to the government in the first quarter of next year, possibly in January.

Bearing in mind the EEC study, the Data Protection Committee is understood to have looked very closely at laws being introduced in Germany and France and modelled its recommendations accordingly.

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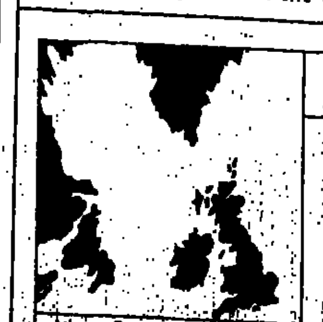

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## Briefing

### E-series New Year launch

INDUSTRY sources now say that the IBM E-series, which will replace the bottom end of the 370 line, is scheduled to be announced in January (CW, October 1). At the top end of the line, IBM is said to be working on an H-series to replace the 3030 line and perhaps extend down to the 370/148. It is likely to be announced in 1979.

The Orbit minicomputer, also coming shortly from IBM's DP division, is now expected to be announced in February. Orbit is expected to be a larger and more powerful mini than General Systems Division's Series 1 in its present form, and likely to include more system software. It will provide an alternative to Series 1 and IBM's own devices like 3790 for network builders (CW, November 3).

### Change of plan

A STATEMENT reported in the US from the new ICL Inc OEM manager that the company is about to launch a new point of sale terminal and a banking teller terminal has caused ICL to alter its plans. The PoS terminal, long expected as a successor to the Singer product, will now be launched sooner than planned, and will be shown to selected customers at a retail show in the US next month. ICL denies that anything new is planned in the banking area.

### Allegation

WHILE it is true that Laur Punter made an allegation against Wellorax under the CSA code of conduct before Laur Punter went into liquidation (CW, December 1) the director general of the CSA, Alan Benjamin, told Computer Weekly that "the circumstances of the liquidation make it extremely difficult to give Wellorax an opportunity to respond to the allegation."

### China contract

AS forecast (CW, September 21), IBM is likely to gain a major contract from the Bank of China in Hong Kong. A deal worth over $20 million involving two 3032 mainframes plus banking terminals is being discussed. The bank is owned by the People's Republic of China.

### Star delay

AFTER Honeywell's problems with CPU chips for the 66/85, which has delayed that machine until 1979, Control Data has hit similar snags with circuits for the Star 100A large-scale scientific processor. It was to be launched late this year, but will not now appear until next year.

### £1m rents

RENTAL business worth £1 million over the next three years has been placed with BASF by two of the biggest users of its IBM-compatible peripherals: the British Mail Order Company of Manchester, and Midland Household Stores of Nottingham. Both are subsidiaries of Great Universal Stores.

**IBM software, particularly the MVS operating system, could become the de facto industry standard in a future in which IBM's mainframe competitors might have to come to terms with providing IBM-compatible systems. And IBM seems to be putting more effort in trying to place stumbling blocks in the way of competition rather than serving the best interests of its customers. Those are just two of the stimulating thoughts of Gene Amdahl (above) as expressed in an exclusive interview last week. Read Tim Palmer's report on page 14.**

## 'As significant as the introduction of penny post'

FOLLOWING a series of seminars in London and Manchester, over 200 data communication users have contributed to the final draft of the questionnaire to be sent out by the National Committee on Computer Networks shortly before Christmas.

The questionnaire is being restructured this week to meet the main criticisms made by those attending the seminars.

Trevor Hyman, of the NCCN secretariat, told Computer Weekly that although the users attending the first seminar had been critical of the questionnaire, all three sessions had been useful and constructive. "This is a very significant chance for users to have their say on something which could, as Alex d'Agapeyeff said at one of the seminars, become as significant and as universal as the introduction of the penny post."

The questionnaires are being distributed to as many of the users and potential users of data communications as the NCCN can identify from published sources, and the emergence of the Committee has been welcomed by the Post Office, which bodes well for acceptance of the results of the survey.

Emphasising this at one of the seminars, Bryan Stanley, general secretary of the Post Office Engineering Union, commented that the Post Office had to press harder for new services.

"We have been campaigning for something like the NCCN," he said. "It can help the Post Office make its case to government. Government does not yet understand the problems."

# Lloyd's threat to IBM users

By Keith Jones

THE dramatic price cuts introduced by IBM for its 3030 series could mean financial problems for existing users holding seven-year lease contracts with a fourth year escape clause.

Lloyd's underwriters are currently investigating the inflated "residual value" of some leased IBM systems — the value put on the sysem if the escape clause is invoked. The low price of the 3030 has made older system prices seem particularly high.

This could result in underwriters refusing to compensate lessees if they decide to invoke the clause but cannot obtain the expected residual value in full, even though they are insured against this eventuality.

Lloyd's underwriters started covering residual values of leased computers about two years ago under what are commonly referred to as "J" policies.

About £500 million worth of machines are believed to have been covered to date worldwide.

But a few weeks ago the underwriters temporarily suspended providing cover on new leases (CW, November 10) partly because they were concerned about the effect of the IBM 3031 and 3032 on the residual values of 370/148, 158 and 168 machines in four years' time.

However, industry sources indicate that the underwriters are also concerned about the size of residual values assigned to machines already covered, which in some cases are as high as 50% after four years — far higher than might be realisable in practice.

For this reason Lloyds may dispute claims from lessees when their contracts reach the four-year mark and they find that they cannot realise the residual values put on their machines. The first claims should start being made in about two years from now.

The residual value of a machine after four years is assigned by the leasing company when it completes the proposal form for the underwriters and it is in the interests of the lessor to make the residual value as high as possible in order to offer the lessee a cheap deal over the first four years.

But a clause in the Lloyd's proposal form usually stipulates that the residual value must represent the current forecast market value of the machine at the point of early termination, based on information available

● Turn to page 5

## Export drive in Mexico

THE Department of Industry is considering giving support to British service companies and ICL to boost a British computer export drive in Mexico.

The Computing Services Association sees Mexico as an attractive export market and would look to the government for some backing. ICL already has a company in Mexico in which it has a 49% stake, with the rest owned by Mexican commercial interests.

## French firm hit by South African boycott

THE tough international attitude to trade with South Africa has cost a French company an order for computer-controlled telephone equipment, but US computer companies are unlikely to follow Control Data's lead in restricting new investment there (CW, December 1).

The South African government has cancelled an order from the CIT-Alcatel subsidiary of CGE for a network of E10 computer-controlled telephone exchanges, because it fears that spares and maintenance may be cut off in the future.

The leaders in the South African computer market are ICL and IBM, with Burroughs close behind, third. Burroughs and IBM both say that they were among the original 12 signatories to the "six principles" agreed by US companies which cover equality of pay and opportunity for all employees (CW, March 10, 1977), and that they have no further plans to alter their approach to the South African market.

ICL's position could become more difficult if the EEC goes ahead with a directive to Community companies not to expand in South Africa.

## Prices down

PRICES of memory units for the Hewlett-Packard 3000 Series II Model 6 computer have been cut by 20%.

## BCS criticises Carter

THE report of the Carter Committee on the future of the Post Office has brought belated criticism from the British Computer Society and the National Computing Centre for failing to address the issues posed by the convergence of telecommunications and computing. The bodies, in a joint statement, question the possibility of appropriate data services being introduced under the present Post Office monopoly, and call for relaxation of the rules for connecting "foreign" attachments to the telephone network.

## £128,000 computer fraud

**THE case of a man who committed a £128,000 computer fraud by sending false VAT claims to the Customs and Excise computer centre in Southend, is one of the highlights of The Money Programme on BBC 2 at 8.25pm tomorrow (December 9).**

**He created 50 companies, a number of which were not trading, and submitted VAT claims for each for about a year, before Customs and Excise officials became suspicious. He was brought to trial earlier this year, and received a five-year jail sentence.**

**His only "tool" in committing the crime is believed to have been an understanding of how the ICL System 4s at the centre were programmed.**

**A second case mentioned is that of a woman who worked for the Hampshire Health Authority.**

**She recently received a one-year jail sentence after duplicating cheques paid out as expenses to medical staff. One cheque went to the correct destination while the other went into her account.**

**As a rough guide to computer users, The Money Programme also asked Mike Comer, a fraud expert, to look at a particular company's system and point out the vulnerable areas.**

## COMPUTER WEEKLY'S INSIDE NEWS

**TEXAS OFFER**
Once again, Computer Weekly presents the Texas Instrument programmers' calculator on a special offer. Page 4

**CHESS CHALLENGE**
A micro chess table is now on the market and Donald Michie evaluates the Chess Challenger. He also explains why computer chess is like weather forecasting. Pages 5 and 6

**JOB ENTRY**
Neddy likes Threshold, the training scheme for school leavers, and is asking for more government backing to schemes like these. George Penney explains what Threshold can do to solve current DP staffing problems. Pages 19 and 48

**ADD-ON BITS**
Just about everything from muzak to security locks, from paper shredders to microwave ovens for the night shift falls within the scope of the term computer accessories and ancillaries. In our special supplement this week, Roger Frampton discusses this particular fringe show and Bernard Allen gives his ops eye view of the scene. And there is news of some of the latest products. Pages 15 to 18

**LABOUR ON IBM**
The Labour Party has called for stricter monitoring and control of multinational companies in a policy document which uses IBM as an example in many instances. Page 20

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| | |
|---|---|
| Editor | |
| Malcolm Peltu | 01-261 8033 |
| Deputy Editor: | |
| Tony Higgins | 01-261 8696 |
| Advertisement Manager: | |
| John A. Godley | 01-261 8359 |
| Class Ad Manager: | |
| Mike White | 01-261 8028 |

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Telephone: 01-261 8000
Telegrams/Telex: 25137 BISPRS G

Branch Offices:
Birmingham: 202 Lynton House, Walsall Road, Birmingham 22B Telephone. 021-356 4838
Manchester: Statham House, Talbot Road, Stretford, Manchester M32 Telephone 061-872 4211
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Members of Computer Weekly staff may be contacted directly on the extensions listed below. Other departments in Dorset House may be obtained by dialling (01) 261 8000.

| | |
|---|---|
| EDITORIAL | |
| Keith Jones | 261 8344 |
| Tim Palmer | 261 8031 |
| John Kavanagh | 261 8025 |
| Stephen Bell | 261 8303 |
| Martin Banks | 261 8808 |
| Robin Webster | 261 8170 |
| Bernard Allen | 261 8035 |
| Mike Marples | 261 8042 |
| Don Mitchell | 261 8413 |
| Darshi Rampal | 261 8543 |
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| Display | |
| Stephen Measures | 261 8293 |
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| Birmingham | |
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| John Graham | 261 8097 |
| Anne Wilson | 261 8098 |
| Manchester | |
| Owen Kelly | 061-872 4211 |
| Birmingham | |
| Allan Escott | 021-356 4838 |
| Production | |
| David Abbey | 261 8016 |
| David Malcod | 261 8578 |

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# COMPUTERVIEW

## Anarchy and revolution threaten the DP future

"IT is a time of crisis for the DP department. Yet, in a sense, it is always crisis time for the DP department. So why is this crisis any more significant than the others?"

That was how Nigel Laurie introduced the workshop on DP/user communications last week, before going on to explain why he believed the DP department is facing particularly far-reaching and urgent challenges — and how they can be faced (page 20).

Yet in a mini survey of DP managers at the workshop, the vast majority said that their two major activities at work were internal personnel management and ensuring day-to-day reliability and availability of the DP service.

Only a few said they spent a large amount of time creating the right climate of opinion towards the DP outside the DP department, or in planning ahead for changes.

In another survey conducted by Laurie of about 40 members of the DPMA, one of the most frequent reasons cited for obstruction to growth and development of DP services was the resistance to change from user departments caused through factors such as "hostility caused by fear of the unknown", "middle-aged user management who are not forward looking", or "lack of user commitment".

Although both these surveys were small, they clearly summarise the dilemma of modern DP management.

On the one hand there is the relentless pressure of meeting today's demands. On the other hand is the awareness that technological developments, such as the convergence of computers and communications and the widespread use of micros, will seriously challenge the role of the central DP department of the future.

Yet planning for change requires a commitment to the future — including a commitment of resources at a time when skilled resources are scarce.

Alex d'Agapeyeff, chairman of CAP-CPP, put this dilemma into a more global context when he said in his group's annual report (page 5) that "The lack of change, rather than inflation, threatens long-term unemployment in Britain and Europe."

He added that "improvements in information processing will replace many existing jobs but there is no sustainable alternative in uncompetitive production and inefficient administration." And he pointed out that a "tidal wave of programmable microelectronics" is about to make a fundamental change in the nature of information processing within the factory and the office.

Laurie also saw these factors as contributing to the current crisis in DP.

For the combination of rapid change, particularly the availability of low-cost access by user departments to computer power, coupled with the threat to employment from increased automation, can lead to user anarchy and rebellion.

Anarchy created by the uncontrolled springing up of computer systems in the guise of word processors or micro business systems, which have such low capital costs that they can be infiltrated into user departments without coming under the scrutiny of those in charge of DP budgets.

User rebellion, said Laurie, could come from a fear of computers threatening jobs, combined with the negative image of computers created in the public media. This could lead to anti-computer consumer and neo-Luddite movements.

As our own voice of the DPM in the street, Focus, might say, "All very interesting and worthy. But how does it help me to satisfy the demands of my management and of my users when our software has more bugs than a mangy dog, my chief programmer has run off with the data prep supervisor, I have unfilled vacancies, my operators seem to be more keen on nude printouts than management reports, my IBM salesman nags me more than my mother-in-law, etc. etc?"

To this kind of heartfelt plea of realism there is no easy answer. Except to point out that by allocating some resources and priority *today*, there will be fewer problems tomorrow.

And that there is a great, although unquantifiable, danger that unless preparations are made now to face up to the challenge of the future, the DP manager and central DP department could face a multi-pronged attack which will be difficult to combat without some (figurative) destruction and bloodshed.

Computerview believes that the greatest dangers to DP departments are a fear of change, an unwillingness to take risks, complacency, and wishful thinking — hoping that if we ignore future problems they might just go away.

Mixing metaphors, it is clear that the future will be inherited by the bold; by those who keep their feet in the coredumps and their eyes firmly fixed on horizons beyond this month's budget or bug report.

## Cause for congratulation

ALTHOUGH the questionnaire produced by the National Committee on Computer Networks was strongly criticised by some users last week (see front page) the Committee is to be congratulated.

For it had the foresight and courage to present the questionnaire to three open meetings, where it could receive face-to-face comments from those who would be asked to fill in the questionnaire on future communications requirements.

The main failing of the questionnaire was that the committee unreasonably expected them to be completed in machine readable form and some questions could be difficult to answer accurately.

Before sending out the final questionnaire, the NCCN will take into account the comments received and will hopefully alter or modify the main areas of complaint.

It would be a welcome departure to have more such "interactive" sessions between representative bodies and those whom they represent. The NCCN may not have expected such vigorous interaction, particularly at the first session last Wednesday. But its decision to discuss the questionnaire *before* it is circulated should mean that this important survey now has a better chance of receiving the widespread support which is vital if the Committee is to present the Department of Industry with realistic estimates of future communications demands.

## Ten years ago...

### COMPUTER WEEKLY DECEMBER 7, 1967

TO handle 600,000 subscribers' accounts BUPA installed a De La Rue Bull GE 425 ... Five South African organisations placed orders for 1900 machines worth a total of £4 million ... An online service to handle mail order business was set up by GUS ... English Electric and Elliott Automation computer operations were further integrated under the overall control of Bill Barlow, now Sir William Barlow, chairman of the Post Office ... The Lords were told that plans for a police computer system were well advanced. The police already had two ICT 1300s and a 1904 was on order ... Buckinghamshire planned to use its 1903 to establish health records of all children born after January 1, 1968 ... An integrated medical system was being developed in Stockholm, based on a Univac 494 real time installation ... An improved version of PL/I, was issued by IBM ... Experts at a Strasbourg Colloquium, decided that programs could not be patented "due to the practical impossibilities in searching back, and the insurmountable difficulties in proving fraud"

## FOCUS ... on maintaining independence

THE arrival on the DP scene of any organisation whose declared aim is to do battle with the industry giants deserves support. Especially when the challenger is an independent computer maintenance company, such as DPCE (CW, November 24).

Manufacturers' service all too often ceases the moment the implementation engineers collect their gear and leave the site. Before the month is out the DPM could well be negotiating "hot line" rates with the Post Office for a direct communication channel to their service engineering manager; or perhaps compiling a list of the installation engineers' home phone numbers plus a few critical contact sources from the sales hierarchy. It could be a fact of computer management life that more time is spent processing service calls than data.

Meanwhile it is hardly surprising that there has been considerable hesitation in the formation of independent engineering companies. Any attempt to compete with the establishment meets a "closed warehouse door" policy.

Manufacturers over the generations have adopted a standard text of apologies. "Normal services will be resumed as soon as ..."

- The holiday season is over;
- The present schedule of in-house training is completed;
- When the current season of computer trade exhibitions (requiring the presence of skilled engineers) is over;
- When the sales team eases up and gives the service side a chance to catch up;
- As soon as pay policies do not encourage job-hopping in order to obtain an increase in salary;
- As and when all the current range bugs have been sorted out and all local installations are bedded-in.

Unfortunately for the DPM, the day his installation gets bedded-in is the day when he opens his machine enhancement or upgrade file. From that point on, the service response improves out of all recognition.

In the UK, Computer F... Maintenance has been le... the challenge of independ... Their pace-setting was no d... assisted in the movement ... wards OEM, distribution ... mini/micros. In all these ... the traditional service engi... are at a disadvantage. T... corporate background pre... interfacing with the opposi...

However, third party m... tenance on this level is no... prime target of DPCE ... Australian company which ... just begun operations in the ... With the valuable British A... ways maintenance contr... already in their pouch, t... have recently been slamm... into the mainframe manufac... rers' monopolistic policies. Th... suggest that the EEC sh... follow the States in encoura... greater competition in the f... of computer maintenance.

David Firnberg, head of NCC believes there is a great willi... ness on the part of the govern... ment to be involved in the effective and economical use ... computing. Maybe the NCC should drop a line on behalf of the maintenance companies.

## INTERRUPT...

ONCE upon a summer afternoon shift, two people were standing close to one of the computers in their twin installation, discussing its high sensitivity. Was it mains fluctuations or radiated radio frequency noise that made it crash so frequently? Whatever it was, the clatter of the system teletype's reload message was a common occurrence.

That day it had happened seven times, and action was demanded. But where to start?

Outside, the day was hot, humid and oppressive. The wind dropped and thick clouds rolled in. Lightning flashed, thunder rolled, the lights dimmed momentarily ... and the teletype clattered its all-too-obvious announcement.

"Better wait 'til the storm is over," one of them said, as he went over to the console and sent a universal message to all the multi-access users on the front-end system.

"Computer No 2 struck by lightning," he sent out humorously, "Back after the storm."

But was it mains or radio noise? After the storm had passed they reloaded. Someone had remarked that switching on the little box containing the RS232/20mA interface had often caused a crash. Taking the box behind the large metal cabinets of Computer No 1, on the end of a long mains lead, one of them turned it on and off rapidly. No crash. Slowly, holding it at arms length, he appeared from behind the cabinet, switching the mains on and off continuously. As soon as it was "visible" to computer No 2 — clatter, clatter and down it went. Must be radio frequency noise from a faulty switch, they decided. They reloaded.

Just then the lights dimmed, perhaps as the storm passed by some power transformers many miles away. Down went the computer once more. Must be both, they concluded, and rang the engineer. But, when the engineer came, he decided it was poor earthing.

MORAL:
You can think that it's this
and that — or either,
But call in the expert and he'll
say it's neither.

● Submitted by John H. Davidson, of Graphic Display Systems, who receives this week's £5 Interrupt prize.


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# NCR to introduce its most powerful series with the V-8600 family

A NEW large-scale multiprocessor mainframe family, the 8600 series, is on the way from NCR, and will give the company a full-range alternative to IBM's 370/3030 series. It could also mean that users of the NCR 8000 series will have available the widest range of software-compatible machines offered by any mainframe manufacturer.

NCR has also, as expected, announced two further Criterion 8500 models, the V-8560 and V-8590. At present offered only in the US, they will be announced in the UK next year.

The 8590 is claimed to be comparable in power to IBM's new 3031, yet it is priced at only $720,000. By comparison a minimum 3031 system costs $1 million. But the 8590, which has twice the power of the existing top Criterion machine, the 8570, will not be available for delivery until the second half of 1979.

The 8580 has 1.6 times the power of the 8570, is more powerful than the 370/148, sells for $517,000 and will be available in the third quarter of 1978.

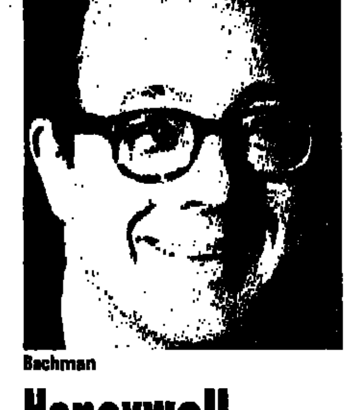
Key feature of the Criterions is that, although they compete in the medium to large-scale mainframe market, their architecture is more akin to that of minicomputers, with an internal bus, direct memory access, and multiple microprocessors handling functions like input-output and peripheral control.

The 8000 series currently includes five levels, although the 8300 line has only been introduced in the US and is really a modernised Century machine.

There is a choice of three operating systems, the IMOS interactive operating system for the 8100, 8200 and 8400 lines, the Century B batch operating system, and the VRX virtual resource executive, both of which run on the 8500 line and on the 8450. The prefix I, N or V before the number indicates which operating system the machine runs. The 8450 is the only machine in the line capable of running all three, and is thus the linch-pin of NCR's migration strategy.

The models announced in each line are the 8130 and 8150; the 8230 and 8250; the 8430 and 8450; and the 8550, 8560, 8570, 8580 and 8590. The I-8430 is the upgrade machine for 8200 series, the N-8450 is the upgrade for small and medium scale century users, and the N-8560 is the upgrade for large-scale Century users.

Throughout the new line, the language standard is Cobol.


Bachman

## Honeywell pioneer gets top BCS award

ONE of the architects of the Honeywell Level 64 and a pioneer of database techniques, Charles Bachman, received the highest BCS grade of membership last week, that of Distinguished Fellowship.

Bachman was a principal designer in the early sixties of the IDS Integrated Data Store system, one of the seminal database management systems. He was also a founding member of the Codasyl database group.

The Distinguished Fellowship was also conferred at last week's BCS annual dinner on three leading representatives of the UK computer community: Murray Laver, who before his retirement was with the National Data Processing Service; Inner London Education Authority inspector Derek Esterson; and last year's BCS president, Gerry Fisher.

Presentations were also made of the BCS annual awards. The technical award went to Professor Brian Randell's team at Newcastle University and the application award to the Exeter Community Health computer projects.

The awards, made in association with Haymarket Publishing, each consists of £1,000 plus a perpetual trophy.

## Tax forms

END-OF-YEAR tax forms are now available for immediate delivery from business forms manufacturers John Wilkes of Bilston. The layout and design meets all legal requirements and conforms to the specifications laid down by the Inland Revenue and Department of Health and Social Security.

# Solving the computer staff problem

TESTIFYING to the importance which the Computing Services Association attaches to the emergence of a stable and well-ordered recruitment situation for computer staff, the CSA director-general, Alan Benjamin, has agreed to act as chairman of the Computer Weekly conference "Solving the Computer Staff Problem."

Also speaking at the one-day conference will be Neville John, managing director of OCC, who is this year's chairman of the CSA's Recruitment Division. He will explain the aims and achievements of the division and will discuss the main features of the code of conduct which seeks to establish ground rules for the relationship between job seeker and bureau.

Another prominent member of the CSA Recruitment Division, John Goldsmith, will put the DP manager under the microscope and, apart from establishing the desirable characteristics for those who hold this important job, will argue that most companies have a totally inadequate career structure when it comes to the DP manager, and that many suffer accordingly.

Whether you agree or not, this promises to be a particularly thought-provoking session in a conference which aims to provide DP managers and personnel officers of organisations using computers with some pointers to the approach they should adopt to formulate an effective recruitment policy.

The conference, "Solving the Computer Staff Problem" will be held at the Cafe Royal, London, W1, on Thursday, January 19, 1978. Further details can be obtained from Chris Hipwell, Room 125, Dorset House, Stamford Street, London SE1 9LU. Telephone: 01-261 8738.

# Headaches for merging building societies

THE data processing departments at the Anglia and the Hastings & Thanet building societies will be faced with major headaches if the proposed merger between the two goes ahead.

The Anglia is moving from an ICL 1904A to a dual 2960 running under VME/B, and has few terminals installed in branches. The Hastings & Thanet has a Burroughs B3731 serving an online terminal network which will shortly cover one branch in three.

The Anglia, 11th largest in the movement, is the bigger society, with 120 branches; the Hastings & Thanet, ranked 13th has 90 branches.

The merged society would become the seventh largest, and the merger is the biggest yet proposed between building societies. It will come up for approval by shareholders next April and if agreed, will take place around mid-1978.

The Anglia stresses that the merger is proposed for business reasons, and that computer problems are a secondary matter. Both societies have acknowledged that the incompatible machines will cause problems.

"We are running converted NCR-Elliott 4100 programs on the 1904A," says A. F. Wilson, computer controller at the Anglia. "The plan is ultimately to rewrite all our applications under VME/B running on a dual 2960.

"To start with, we will run the 2960s separately, developing the VME/B programs on one machine while the other runs the 1900 programs under DME. We have the first machine, and we are near the end of testing DME, and hope to go live in six to eight weeks.

"We have our annual run coming up, which means running 24 hours a day, seven days a week, for at least a fortnight, and if there is any doubt about DME, we will do it on the 1904A. The plan is to get rid of the 4A in February or March.

"We have 26 7181s and 18 7502 terminals, with about a dozen in branches and the rest here at head office. We decided to use VME/B rather than VME/K because it is more fully developed, and because it is clearly an all-purpose operating system which will give us the flexibility to react to changes in the way the society does business.

"Perhaps we could get the same flexibility from K if we knew enough about it, but I would not consider using it in its present state," added Wilson.

Peter Webb, the Hastings & Thanet DP manager at Brighton is convinced that his system is the right one for a branch terminal network.

"If you want an online system, there is really only Burroughs and Univac, and fortunately we have 50 of Burroughs TD700 terminals installed in branches as far north as Preston, and another 20 are going in shortly. There are several per branch in the busiest ones, because we use them as counter terminals, doing online inquiry and data entry, although not real-time updating."

"The boards have said that the two head offices will be retained for five years, and that there will be no redundancies in the interim, but I hope we will be able to get the computer systems integrated before then."

## Lynx on right track

IF there is a market for personal computers and hobby kits in the UK, then Lynx Electronics went a long way towards finding it at its recent seminar at the Wembley Conference Centre. About 300 people were expected — and 550 turned up. Lynx thought it might sell a few of its Nascom 1 microcomputer kits — and it sold 96.

Nascom sales now exceed 300 and virtually all have been sold sight unseen. Introduced last month (CW November 3) the kit is based on a Mostek Z-80 microprocessor and features a QWERTY keyboard and TV interface as standard items within the £197.50 price tag. First deliveries started last week, and the initial order backlog should be cleared by the middle of January.

According to Lynx, several orders are now coming from industry and this tends to support the company's contention that Nascom 1 is one of the best Z-80 evaluation kits available.

To back up the kit, and its individual users, Lynx is starting a Nascom Club. This will act as an exchange forum for hardware and software information and advice between users, and will be run on a postal basis from the company's Chesham offices by marketing director Kerr Borland.

A repeat of the seminar is currently being planned by Lynx for January, in Manchester. Another may be held in London, if there is sufficient interest.

# Pactel's West Europe 'league table'

A SERIES of European market reports is on the way from PA's Pactel division, covering 10 subjects ranging from mainframes to microcomputers, small business systems to business communications.

Compiled from data in Pactel's InterBase series of databanks of statistics, the market reports will be a secondary activity for Pactel's consultants.

The first report to appear will be the European mainframe market in Western Europe 1977-86, which concludes that mainframes will continue to dominate the computer market over the period.

Small business systems are expected to force the bottom end of the mainframe market up, but distributed processing systems are not considered likely to impact the top end of the market very much.

The value of mainframe shipments in 1977 is seen to have been 1.4 times that for minis and small business systems combined, and 1.5 times the value of software and services sales. For next year, shipments are expected to stand at $4,680 million by value, growing to $7,270 million by 1981.

In Western Europe, ICL is judged to hold third place by value with 9.6% of the market, compared with Honeywell and affiliates' 10% and IBM's 54.5%. Univac ranks fourth with 8.4%, followed by CDC 5%, Siemens 4.8%, Burroughs 3.7% and NCR 2.8%.

The mainframes report will be followed by business communications and microcomputers. The reports will appear at regular intervals throughout 1978.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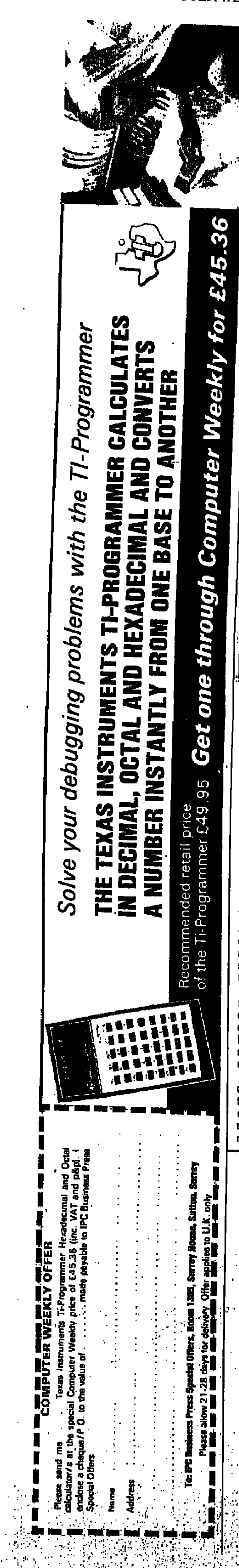

Our picture makes it look as if the Australians are developing the answer to a shortage of data entry clerks. The dog-operated terminal would, of course, have smell-coded keys — or is this particular Dobermann short-sighted because it's not wearing its glasses?

Alas, the truth is more prosaic. It is simply an unusual way of demonstrating the Checkmaster system, which maintains details of 500,000 dogs on the ICL 2903 at the Royal Agricultural Society of New South Wales. Developments to the system have just been completed by UK consultancy, System Aid.

## *Railway romance goes West*

NOW that God's Wonderful Railway has gone, alas, I hear that British Rail, as it likes to be known these days, is planning to spoil what little romance is left for boys wanting to be engine drivers.

BR says that the long distance driver is to be supplemented by the panacea for all ills, the computer.

With the development of train speeds nearing the 125 mph mark, BR says that present forms of control of speeds are negative, and it plans to have microwave transmitters telling a micro on each footplate the optimum speed at which to travel.

According to a spokesman, drivers will still have overall control, but the micro will make the train go faster or slower as the case may be.

The spokesman emphasised that he did not see this happening unless and until there was commercial justification for high speed trains on most inter-city routes.

DOWNTIME by Chell

## *Just call me one-zero-six-nine*

IT had to come — and there was a good chance that it would come from the US. While the rest of us are complaining about being "reduced to numbers" by computerised systems, Michael Dengler, of Minneapolis, has announced that he wishes, in future, to be known as 1069 — pronounced one-zero-six-nine.

Upholding his decision before a court — one has to square this kind of thing with the authorities — Mr 10 (or is it Mr 69?) called a "computer specialist" to testify that numbers make a person just as identifiable as names. Our regular columnist Tom Gilb would probably disagree with him (CW, December 1).

The telephone company's chief ground for objection is that they would not know where to list 1069 in the telephone directory. The computer specialist could have told them. So could a Mr O'Brien of my acquaintance, who was erroneously punched on to a file as Mr Zero-Brien. He was sorted in front of the As, and didn't get a bill from the company concerned for six months.

● **THIS week's riddle: Why is a time sharing computer like a pen-knife? According to an advertisement run by a prominent minicomputer manufacturer in the US Press, the answer is that they are both "multifunctional, compact and easy to use". It compares its own product to a particularly sophisticated pen-knife now in most sports shops. I wonder if the mini has a thing that can take stones out of horses' hooves?**

# LETTERS

## Scientists must break through this mind-blocking dogmatism

AS a logician, I feel compelled to criticise Professor Michie's comments on A. C. Clarke (CW, November 24), not particularly as a defence for Clarke, but more in order to disperse the unwisely constraining premises which Michie uses in his generally unconstructive article.

Initially the professor tries to boggle the reader with God-like assertions such as (1) memory chips can never hold more than a function of the atoms/cc; (2) switching can never exceed the speed of light.

It is lucky for science that such mind-blocking dogmatism did not stop the Einstein he quotes, and other deep thinkers, from stepping through (or around) the barriers of their days.

Michie apparently prefers to consolidate barriers rather than take the more reasonable course of saying, "The electron techniques we are immersed in at the moment do not seem to be capable of sufficient extension."

Maybe they are not, but who knows what form of computers the future may suddenly offer?

Maybe the next genius will demonstrate a theory of which Einstein's is only a subset, in the same way that Newton's, etc, were only subsets of Einstein's.

Maybe future computers will be so different fundamentally as to be unrecognisable as the electronic packages of today. Maybe not even "electronic".

Thought wave focusing and discrimination originally manifested electron theory, and no machine has yet replaced the mind's faculty for incisive originality, even though lacking storage, switching and access speeds. So if Michie became a Buddhist he might hit on Enlightenment regarding the solution of "impossible" problems!

His next contention is that symbiosis will prevail over displacement. Maybe it will in his lifetime, but people such as Clarke recognise the fallacy of a human trying to set limits on the surprises provided by their own environment.

My previous paragraphs indicate how Einstein in a few sweeps of his pen displaced all thinking of his time.

I am as sure as a science fiction writer that someone else will eventually displace the currently impossible (and Michie!), even though the bulk of the population will tag along in non-cognisant ignorance.

Surely the professor cannot dispute that nations and "masses" do have characteristic mentalities. Clarke does not seem to say that the mass of humans are "incapable," but merely observes that the masses are slow on the uptake — which they are.

Donald Knuth is rightly quoted as an excellent (and humorous) thinker. He has written on the problems of how best to sort data and the theoretical limits. While reading Knuth, I thought, for example, supposing the data were not confined to locations in a fixed matrix; with the consequent problems of testing their values and shuffling about?

Work is progressing on bubble memories, etc, so in that direction, what if some clever chap eventually loads up half a million discretely charged bubbles in a fluid matrix, then in one "sort" operation applies a field across the lot and they all move to their appointed levels? It then remains to lure the bubbles off sequentially.

I predict this should be achievable before long. Anyway I am not an expert on bubbles, but the fundamental idea of this fluid-sort seems quite reasonable to me, and would solve Knuth's "impossibility" criteria on sort algorithms.

The only endearing phrase Michie produced was "It is now believed that certain problems have no good algorithms." His whole article would have been better written in that manner.

Finally, professor, your conscience caught up with you in your last but one paragraph, and counteracted all its foregoing. You wrote, "A dog cannot be said unable to chase rabbits if it has never seen one."

Very true, and no doubt when the experts on machine intelligence have absorbed the future tools and approach to computing they, too, may learn to run.

Dr A. MARSHALL
Southampton

## Looking for David Grant

SINCE returning to the UK some six months ago I have been trying to contact a colleague with whom I worked in New Zealand. As all the more usual channels have failed, this is my last hope.

My friend is Barney (David) Grant, and I would appreciate if he, or anyone knowing his whereabouts, would contact me at the address below.

IAN CARCARY
6 Queens Square
Glasgow, G42

## Cashpoint: no comparison

I READ Mr Hague's letter (CW, November 24) with great interest. My company has always held the Lloyds Bank Cashpoint system in very high esteem and it is perhaps rather impertinent to compare features of our pilot operation with the well established Cashpoint operation.

However, I feel sure that Mr Hague fully appreciates the difference between the real time updating of a memo file and the real time updating of the main account record concurrently with any other transactions which may be in processing at the time of the autoteller transaction.

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# NEWS IN BRIEF

## Canadians buy Sycor Corp

DETERMINED to acquire a major interest in the US computer terminal industry, Northern Telecom of Canada is to buy Sycor Corp and has also taken a 12% stake in Data 100 Corp of Minneapolis, with an option to expand its holding to 35% by the end of 1978.

Ann Arbor, Michigan-based Sycor builds a wide range of interactive display terminals. The share exchange deal with Northern Telecom values it at $77 million. Northern Telecom, the manufacturing arm of Bell Canada, attempted to buy Applied Digital Data Systems earlier this year.

## Intel appoints Memorex man

NEW vice-president and general manager of Intel Memory Systems in California is to be Bill Macalmont, currently vice-president and general manager (Europe) for Memorex. He takes up his new post on January 1. Macalmont has been with Memorex in Europe since 1969, joining the company from CDC in Europe. The company's first European vice-president, he has taken sales in the territory from $20 million to over $100 million. He is succeeded by Reto Braun.

## £1m order

AN export order worth £1 million for 200 of its Model 4016 drum memories has been won by Vermont Research of Leatherhead, Surrey. The customer is the Bell Telephone Manufacturing Co of Antwerp, Belgium, which is to use the 4016 drums as store and forward memories in its Metaconta computer controlled telephone exchanges.

## Top and bottom

NEW models at the top and bottom of Burroughs smallest line, the B80, have been announced in the US. The top machine, the B80-60, costs up to $59,400, and the new bottom machine is the B80-20, which costs less than $20,000. The machines are not yet available in Europe.

## CMC for oil group

TO replace an existing key-to-disc installation two CMC 5200 keyprocessing systems have been bought by the Continental Oil Co. One is for the company's London data centre and the other for use at its Grimbsby oil processing plant. They will be linked by a CMC Teledata system to prepare data for the company's IBM 370/135.

## Mark III access

THE General Electric Mark III Network Information Service now has another access point, bringing the total to 19 in the UK and Ireland. Honeywell, distributors of the service, have opened the office in Hitchin, and it covers the main towns in Hertfordshire and Bedfordshire.

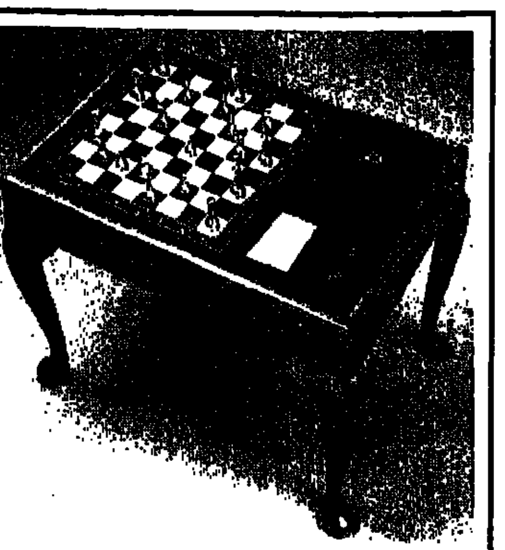
## Shares link-up

STOCKBROKERS and jobbers outside London are to be equipped with 100 ITT 3330 Dataprinter terminals, worth over £250,000, to link them into the Talisman bargain settlement system in London. Their counterparts in the City have used terminals for the last three years to access the Charm bargain checking system, which will form part of Talisman.

## Micro compiler

AN RTL/2 compiler for the Texas Instruments 990/10 micro is to be developed by Software Sciences with the support of ICI originators of the language. System Designers Ltd is already developing a Coral compiler for the TI 900.

## Micro-based chess table



**OBSERVERS waiting for the microprocessor to become "part of the furniture" have had their wish fulfilled. A micro device equipped with a chess-playing program has been incorporated into a range of chess tables, marketed by Cumbria Crafts, of Clifton, Bedfordshire.**

**The US-produced processor and program are identical to the Chess Challenger, which is commented on in page 6. The table version is very much "up-market", costing about £500, but it is hoped to produce a £300 version.**

**Cumbria offers a variety of period and modern styles of table with the board etched on copper, by the same process as used for printed circuits.**

# CAP hopes to 'ride micro tidal wave'

HOPING to ride a "tidal wave of programmable microelectronics applications" with its micro development aids, the CAP-CPP group is aiming to become a comprehensive "computer support group."

Announcing the group's 1976/77 results, group chairman Alex d'Agapeyeff said that the nature of its activities is likely to evolve over the next few years beyond its current software based role, particularly due to its ability to provide micro-based solutions through its MicroAde and MicroCobol development systems.

As an example of the type of activities it would be involved in, d'Agapeyeff said that CAP-CPP could provide support centres to assist DP departments in handling multiple "replicated" systems.

In a "replicated" system, a large company would have a basic small system, handling say stock control and local processing for each of its branches. CAP would provide a support centre for all the branches using the same basic systems, even if it was tailored to individual needs — provided the replicated system was using standard CAP packages and development aids.

For the year ended April 30, the group's profits rose by £60,000 to £333,000 which, according to d'Agapeyeff, "is not yet satisfactory and, within permitted levels, more frequent increases in fee rates and product prices are inevitable."

Turnover nearly doubled from £3.35 million to £6.5 million, with a further increase to over £8.6 million forecast for the current financial year. One of the group's associate companies in the Middle East still owes over £180,000 to the group.

Remarking that it was "the lack of change rather than inflation" which was the main long-term threat to full employment in the UK, d'Agapeyeff said that the new information technologies, such as micros, "will create job opportunities but these will chiefly be in risky, innovative, market-driven enterprises that rival those of the Americans and Japanese. In any event, CAP-CPP is not going to wait for its overseas successors to arrive at the door-steps of its clients."

CAP was the first company to join the NEB's Insac computer services group. The NEB and the Charterhouse group are both minority shareholders in CAP.

### Rivals' query

**THE need for extensive micro development aids has been questioned by Philip Hughes, director of one of CAP's main rivals, Logica.**

**Speaking at an ACM meeting in London last week (see back page), Hughes commented that Logica had found that broadly speaking, "micros are much easier to program than we thought."**

**The main reason he gave was that micros enabled tasks to be broken down into simpler components, each of which bore a closer relation to a specific task.**

**He also pointed out that the development of a micro-based system tended to be cheaper than for equivalent mini-based system.**

## Future systems

TRENDS in computer systems, and what the future holds for them, is the subject of a 700-page Infotech report "Future Systems".

# Five million records at users' fingertips

BLAISE, the British Library's online information service which puts five million records at users fingertips, was officially opened by Shirley Williams, Secretary of State for Education and Science, in London on Friday.

The British Library is currently using Rank-Hovis-McDougall's IBM 370/145 system based in Harlow, where the database, made up of specific files such as Medline and Marc, is held online.

But development of the library's Merlin system is continuing on an ICL 2960 machine owned by Bracknell-based bureau Computel (CW, July 14). This system will eventually replace Blaise.

Medline and Marc are typical of the data available to Blaise users containing, in the first instance, references to biomedical journals published worldwide, and information on books and serials catalogued by the British Library and US Library of Congress in the latter.

## Book inquiries

To handle customer inquiries, an NCR 8250 system with six VDUs and a line printer, is to be installed at the Godalming headquarters of Bookwise Service, paperback distributors.

## Threat

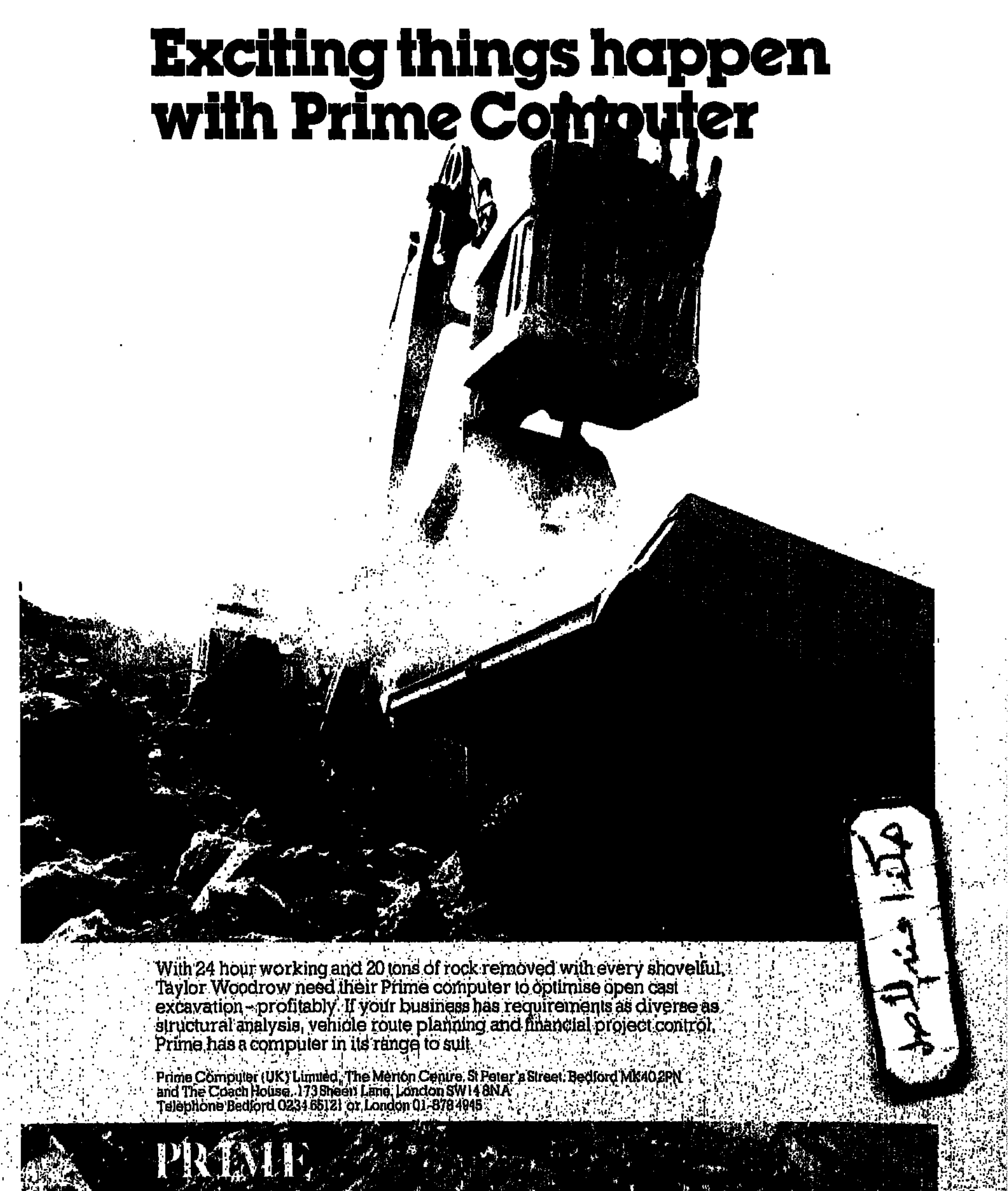
● From front page

to the lessor at the time the lease is written.

If the underwriters can show that the assigned value was unreasonably high they could have a legal right not to honour a policy. This is because contracts of insurance are voidable.

Whatever happens the leasing company does not lose out financially because the lessee is obliged to pay the leasing bank the full seven years of charges even under a lease with a break clause.

This means that if Lloyd's underwriters refuse to pay out, the lessee will either have to keep the machine for another three years or take the best price that the leasing company can get for it and offset this against the termination fee due to the leasing bank, paying the difference himself.



# MICHIE'S PRIVATEVIEW

## Plight of artificial intelligence workers in a 'no win' state

ARTIFICIAL intelligence workers sometimes complain that they are placed in a "no win" situation.

"Would it be intelligent if a machine could read a newspaper and give you a summary of its contents?" inquires the AI man.

"You bet!" replied the onlooker.

"Oh," says the AI man, "my student, Finknottle, just did that."

"How does his program work?" asks the onlooker with an air of suspicion.

After a spell with blackboard and terminal he decides that his suspicion was justified. "So *that's* all! I don't call that intelligent."

Many of my colleagues find this understandably irritating. If every implementation of this or that aspect of intelligence is to be dismissed the moment it is understood, then what hope is there?

Both sides, of course, accept that there must be no trickery. A program which prints out just the headlines from a newspaper might achieve a surprisingly good summary. Rather than "... but you said that summarising newspapers was proof of intelligence" the honest programmer says "I fooled you! Think twice before you next agree on a test of intelligence."

I shall call tasks which do not require intelligence even from humans Type O tasks. More interesting cases arise when the task as defined cannot possibly be done by a human except on the basis of considerable intelligence. Here most AI people have been content with the criterion: "Intelligence is as intelligence does". I believe that we have been wrong, and that the nit-pickers are essentially on the right track.

The critic usually has at the back of his mind the power of the human brain to *conceptualise* its task environment. Some tasks, he realises, require a high degree of conceptualisation, if they are to be tackled at all, whether by brains or by machines.

An example would be watching a cricket match and preparing a newspaper report of the game. Even annotating a game of chess between club players would be regarded as a far more intelligent machine feat than a chess program's exploit in beating the players of such a game. Call such tasks Type 2 tasks.

Now we turn to an intermediate and, as we shall see, critical level of complexity.

This intermediate level is occupied by tasks of Type 1. They demand a high degree of conceptualisation from the human practitioner, but offer the possibility, in this era of nanosecond processing and $10^{12}$ bit memories, of finding machine solutions by other routes.

It is here that the critic is inclined to say "I see that any human who accomplishes these tasks must use intelligence. I also see that your program is very clever. But the cleverness is all used, together with prodigious advantages in brute computing power, to avoid the necessity of putting any intelligence into the program.

"The degree to which it uses a conceptualised model of the problem-domain is rather trivial, and unlike human solvers it seems to have no power to revise or add to those few concepts which it has." For Type 1 tasks, he is right.

Examples of Type 1 can be found in weather prediction.

When the European Centre for Medium-range Weather Forecasting at Bracknell commissioned the Cray 1 machine in Britain at the end of October, they had upwards of 80 million instructions per second at their finger tips. No-one will doubt their ability to extract, from massive numerical computations, one-week predictions which are better than the forecasts of unaided meteorologists.

Eventually the aspirations of computer-aided forecasting may grow to the point that conceptualised and heuristically structured models, of the kind beloved of AI people, will have to be integrated into the present super-calculational representations. But by then, one suspects, unaided human forecasters, however intelligent, will have been left behind.

So, if a program describes a cricket match, we concede its intelligence without the need to look inside it. If it predicts the weather, we need to know how. Our error in the past has been simple failure to distinguish clearly between the two types.

Computer chess comes closest to meteorology in these respects than any other domain I know. Over the domain as a whole, human intelligence still easily out-performs brute-force computing. The task of building a grandmaster program probably belongs to Type 2, as also does the task of implementing a "general meteorologist" as opposed to a one-week forecaster. But there exist non-trivial sub-domains which are demonstrably of Type 1, and here an interplay can be observed between two very different "mentalities": the human and the machine.

## Chess challenge

I HAVE been asked to have a look at the Chess Challenger, the desk-top machine designed, as its name implies, to provide a challenge to the chess player. It is based on an Intel 8080 microcomputer with a 16K ROM program and 512 bytes of RAM. It costs about £140.

I have carried out some trials with this device and it is important that the qualification "basic" is emphasised.

This utility model plays at so low a level that I cannot imagine it providing useful practice except to a beginner. But for a beginner the fact that it has no facility to detect illegal moves would prove a drawback.

There is an advanced model of more interest. This has three settings, for three levels of play of which the lowest corresponds to that of the basic model. At the highest setting the machine takes about half a minute finding its move and its play is that of a very weak club player, according to my subjective impression, perhaps about a 1350 rating on the US Chess Federation scale.

Such a player could of course get some practice. But the deterministic responses of the machine when repeatedly taken through the same playing sequence would largely vitiate its usefulness. A random tie-breaking facility for move selection would help a great deal.

I do not see so limited a device being a good buy, even though the styling and ease of operation deserve praise. Its play just is not tricky or flexible enough, and it makes blunders which even a four-ply look-ahead would avert.

The Chess Challenger is handled in the UK by Data Efficiency, of Hemel Hempstead, Herts. See page five.

## Puzzler

STUDENTS of astrology will be interested to learn that combining the 2nd and 12th Signs of the Zodiac has been found to generate the 8th Sign. In other words:

TAURUS
PISCES+
SCORPIO

The mystic solution to this alphametic will be found on page ...

# SOFTWARE — EDITED BY STEPHEN BELL

## Test installation reports satisfaction with VR executive

WHILE NCR Criterion users are waiting for a general release of the Virtual Resources Executive, VRX, for the machine, a test installation in the US has reported satisfaction with the performance improvement conferred by the executive.

The Atlanta Housing Authority has installed two Criterion 8570s to process a variety of accounting work. Keith Bates, assistant director of finance in charge of DP, said that, besides improving run time performance, AHA had improved the productivity of its programmers and operators and reduced key-punching.

Although much of the run time improvement could be ascribed to the more efficient hardware, which replaces an NCR Century 251, Bates agreed that the new executive had been an important factor. The other benefits cited are almost entirely the result of the software.

As the term "Virtual Resources" implies, the executive implements not only virtual memory — giving 8 Mbytes of virtual storage for each program — but also allows disc file accesses to be totally independent of the units on which the files reside.

This is clearly a factor in easing the tasks of programmers and operators. Moreover, since it confers greater flexibility in the placing of files on disc, it can result in a saving of disc space.

The greatest saving in programmer time and key punching is, however, the result of the executive's attendant online program development facilities, said Bates. "If online program development were the only advantage offered by VRX software, I still would have jumped at it."

Praise was not reserved for the NCR products. Another important benefit of the system was the improved inquiry capability catered for by Cincom's Total database management system and Query software. Total has been taken up by NCR as its standard DBMS, and Query was developed for NCR by Cincom (CW, August 25).

AHA's system is accessed through a network of terminals in its own local area, and acts as a service bureau for other housing authorities.

The Criterion 8500 already has at least one UK user, the Principality Building Society, Cardiff (CW, August 26, 1976). There is no current UK test installation of VRX, and general release of the executive in the UK is not expected until next year.

## CAP-CPP package launched in the UK

A SUITE of job accounting and performance measurement software for IBM machines, based on a product developed by ICI has been released in the UK and Europe through CAP-CPP. The product, in a steadily evolving form, has had several years' successful marketing in the US, from Boole and Babbage.

There are now three parts to the package, the Computer Accounting System, the Computer Performance Analyser and, the latest addition, Facility Management Reporting. CAS is an enhanced version of the Computer Utilisation Monitor CUM-2, developed at ICI.

CAP-CPP, normally an agent for B and B products in Europe had previously been prohibited from selling the new product in the UK, due to its similarity to CUM-2, but this restriction has now been lifted.

The package which covers a wide range of applications claims CAP, can usually only be served by several packages from different suppliers. CAS calculates charging rates for computer time and resources.

CPA provides statistical information on the progress of work and how well the system is being utilised. Its written and graphical data can help to identify bottlenecks in the system.

FMR, released about ... months ago in the US, takes a long term view, providing information on the general loading of the system, and so helping the user to decide when the upgrades will be necessary.

As an "introductory offer" the three packages will be priced at £9,100. One package can be acquired for £4,400 and two for £7,050. Regular prices will be about 10% higher.

## Will-Denn contract

AT THE same time as CAP's UK release of performance measurement products based on ICI's CUM-2 (see story above), Will-Denn Resources, of Horsham, Sussex, the original UK agent for CUM-2, has made known its own further plans in performance measurement and related areas.

The company is working on a contract to design performance measurement, accounting and DP project control software for several branches of watch manufacturer Timex, in the US. The software is to be completed shortly and will subsequently be marketed as a package.

Written in Assembler, the new software is claimed to be far more efficient than the original CUM-2 which was written in PL/I. Will-Denn sold about 15 copies of CUM-2, but admits that most of the installations are no longer using it. CUM-2 is still available from Will-Denn, but the company's exclusive UK rights expired last year.

The contract to Will-Denn for the new system was worth about £50,000. An interesting feature of the project is that all design and programming was done in the UK.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## Enhancements for Level 64 machines

A MAJOR software release has been announced by Honeywell for its Series 60 Level 64 machines. Scheduled to become available in the second half of next year, the software brings to the Level 64 several enhancements already implemented on the Level 66.

Enhancements will be made both to the main Gcos 64 operating system software and to associated areas such as database, data communications, file cataloguing and interface for interactive users.

The most significant operating system extension is to the multiprogramming capability. Gcos 64 can now support 10 concurrent "activities," each of which can be quite complex within itself. Support of an entire OS/2000 environment or management of up to 254 concurrent transaction processing terminals can, for example, be accommodated as one activity.

As well as increasing its capacity, the operating system has gained new efficiency through dynamic optimisation of despatching priorities. If the CPU time is not being efficiently utilised, the OS will change the priorities to improve overall performance.

On the communications side, the Level 64 Transaction Driven System has been enhanced to interface with Honeywell's standard database management software, IDS II. Security protection for the TP system has also been improved.

An alternative version of IDS II itself will emerge with the new release of software. Designed chiefly for the first time database user, it handles relatively simple database structures, and has no automatic connection of newly-entered records into the existing structure. These simplifications lessen resource consumption.

The Interactive Operator Facility will also form part of the latest release. As the name implies, this provides conversational RJE, enabling a user to create, update and read data or program files, submit jobs and check their progress.

The catalogue facility has been extended to handle user files, with a user and project designation appended to each file.

Following their migration from the Model 66 to the Model 64, it appears likely that some of these facilities will, at a future date, be transferred to the Level 62. A Level 62 implementation of IDS II is under consideration.

## Centre-File installs Total

ENHANCING its stockbroker service to offer international dealing and settlement, the Centre-File bureau has implemented Cincom's Total database management system on its IBM 370/155, as the basis of the new application.

The stockbroker service has been running for 11 years, offering a variety of accounting and online inquiry facilities for stockbrokers' dealings. Until now, however, all dealings have been recorded in sterling, and the system has always used conventional files.

Software to handle deals in foreign currencies was acquired by Centre-File from one of its clients who had founded his system on a database, and Centre-File wished to change the design as little as possible. The original system was designed for Burroughs' Forte, and so an IBM-compatible DBMS had to be found.

## PROGRAMMER NOTES

### More or better?

SOME of the long term programmers among our readers must have noticed that when they mention their occupation, people look less blank than they used to. The term "programmer" is becoming more familiar to the world at large — a reflection of the fact that the number of programmers is rapidly increasing.

With this growth, however, come doubts of whether it is adequate to service the rapidly growing number of installations. By 1985, a recent report predicted, the US programmer population will be a third of a million. This will probably provide far less than one programmer per machine, taking into account both general purpose computers and those performing dedicated functions.

Various suggestions have emerged for dealing with the increased demand. As with many topics related to programming, this column believes that the programmers themselves would be well qualified to add their voice.

In the first place, we must ask whether we should aim for more rapid numerical growth in the programmer population. The alternative is increased productivity per programmer, a subject which has already been treated in Programmer Notes (CW, November 18, 1976).

Suggestions for increasing productivity have included the usual range of "improved" programming techniques. These have been practised for some time, but do not seem, on the surface, to have resulted in any great increase in productivity.

Another prevalent opinion is that the fault lies not with the programmer's speed of working, but with poor scheduling, leaving large gaps in the day with no work to be done. There should be ways of remedying this, but every programmer knows it is still a shortcoming of most installations.

If productivity cannot be noticably improved, then there is only one alternative — the number of competent programmers must be increased at a rate estimated to be far beyond current educational resources.

What is the best way to achieve this? Do we increase educational resources or ease the educational task by developing very high-level languages?

Perhaps as one of our freelance correspondents suggests, we should allow trained programmers to remain programmers, and not force them to become systems analysts and managers in order to get a rise in salary.


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## Medical data on community

**AN application in the useful but controversial area of relating separate databases is under development at the Department of Community Medicine at Leeds University. The exercise, based on a Digico Micro-16E minicomputer, collates medical data with data on the community.**

**Health authority information on the incidence of cancer and other diseases and hospital activity is to be cross-matched with geographical population data from Leeds' Local Authority Management Information System. Output will be a density distribution of diseases and hospital work in one-kilometre squares. This will be released to interested organisations.**

**The university stresses that data will be kept confidential throughout the collation. Information on individuals will not, of course, be extractable from the statistical output data.**

## Interdata launches TP monitor Itrac

THE transaction processing monitor, Itrac, for Interdata 32-bit minicomputers (CW, November 10), has been officially announced in the UK. Interdata has, at the same time, arranged UK seminars to introduce users to the product. This is part of a general response to user requests for more in-depth presentation of Interdata's hardware and software products.

Itrac, like most mainframe TP monitors, handles its transactions as a logical sequence, or "thread," through several small applications program modules, rather than involving a single large program. Several transaction "threads" can be handled concurrently, using the same or different modules.

At present, only Cobol program modules are supported under Itrac, but Interdata plans to extend the software to interface with other languages.

Particular Itrac features include interactive definition of screen formats, incorporating validation criteria for entered data fields. A format is designed simply by creating its image on the terminal screen. Formats can be re-defined, even while Itrac is running, says Interdata.

The end user can also interact with Itrac applications through "menu" displays, allowing selection of the next application to be performed. The TP monitor includes password protection, and file and record locking, as well as full recovery facilities.

Itrac runs under the OS/32 MT operating system and uses Interdata's Telecommunications Access Method, Itam, and Index Sequential Access Method, Isam. UK price for Itrac is £4,300.

Details of the Itrac seminars can be had from Interdata Ltd, 227 Bath Road, Slough. Tel: Slough 34511.


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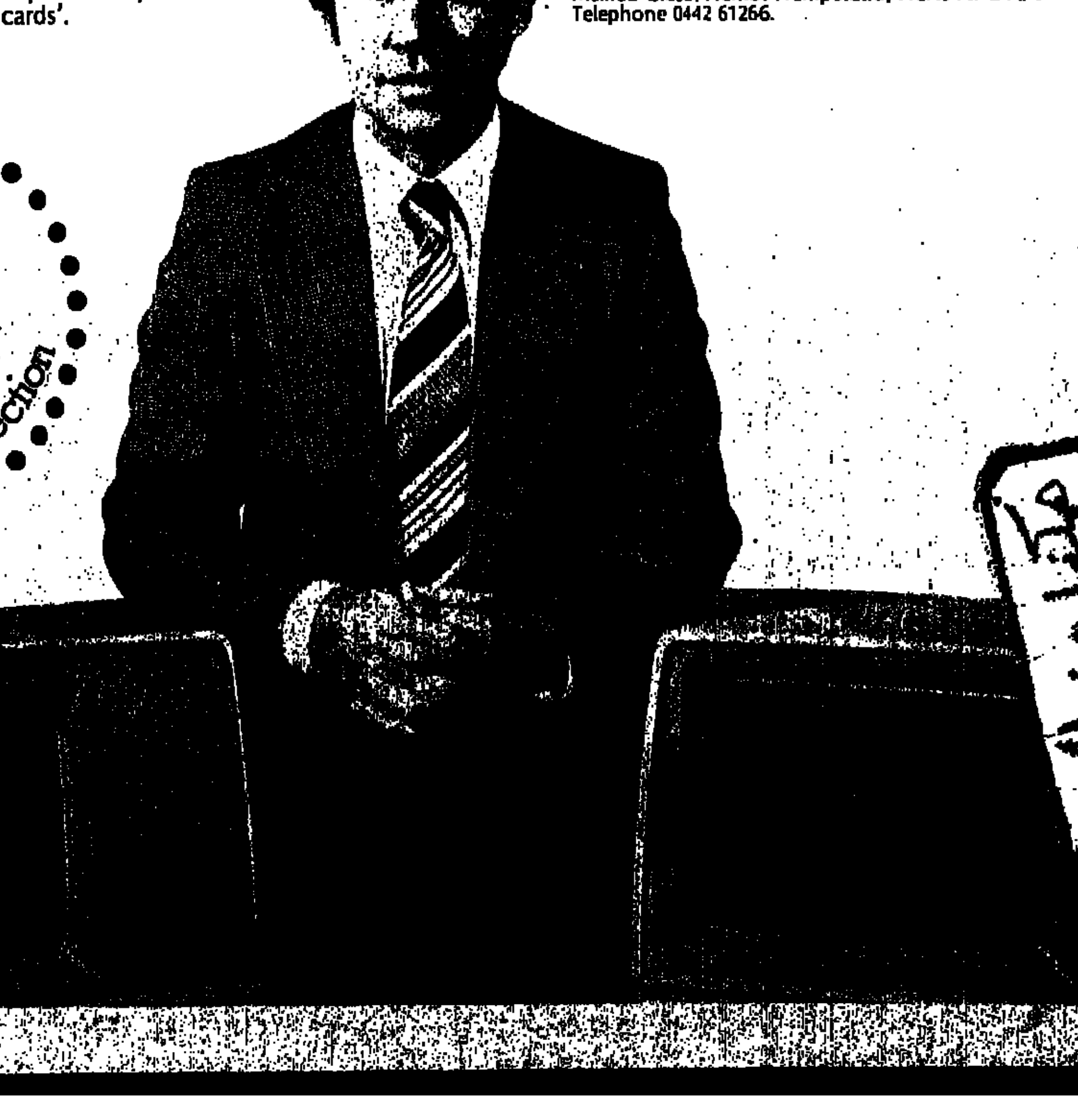

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# PEOPLE

## Mirabito will be Burroughs' chairman

FROM January 1, 1978, the top man at Burroughs will be Paul Mirabito. Already president and chief operating officer, and poised to succeed Ray Macdonald when he retires at the end of the year, Mirabito has now been confirmed as the next chairman, president and chief executive.

Macdonald is the man generally credited with having turned Burroughs round from a scarcely profitable company in 1964 to the most profitable mainframer next to IBM. He will stay on as a director, consultant and adviser. Mirabito has been with Burroughs since 1951.

**George Hood-Leeder** has joined Harris as a sales executive for South-East England. He was previously with British Olivetti's IDP division in a similar position.

**Mike Doherty** has become sales co-ordinator with Knight Computer Services' software division. He was previously operations manager with Assyst in Saudi Arabia.

**Malcolm Bigg**, until recently director of computer services at Lowndes-Ajax, has been appointed deputy managing director. The manager of production services, Tudor Ellis, has been made associate director for this operation. Michael Reeve, formerly sales manager, has been promoted to associate director, UK sales, and Lionel Woodcock has joined Lowndes-Ajax as associate director of the newly-formed marketing department. Woodcock was previously director of management services with Franklin Mint.

**Cliff Kentish** has become manager of special accounts with Applied Computing and Software. He is the immediate past chairman of the IBM Computer Users' Association Management Group and a member of the CUA Council, and was until recently DP and management services manager with stockbrokers Grieveson Grant.

**Rajesh Chauhan** has joined I. P. Sharp as an APL consultant. He recently got his BA in computing science at Imperial College, London.

**Roger Holdom** has been appointed to the new post of director of research and consultancy services at UMIST, the University of Manchester Institute of Science and Technology, effective January 17. He is at present a senior lecturer in microbiology at Strathclyde University.

## Chairman for LAMSAC

APPOINTED as the new chairman of the Local Authorities Management Services and Computer Committee is councillor John Kotz, of Hackney Borough Council.

He was previously chairman of the London Boroughs Management Services Committee from 1971 until its merger with LAMSAC in 1975.

Elected to the then Metropolitan Borough of Hackney in 1953, councillor Kotz has been chairman of its administration committee since 1971.

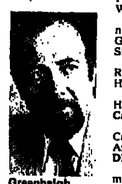
**Graham Harris**, previously a salesman and recruitment consultant with Trident, has become national sales manager with responsibility for all contract staff placements.

**Tony Williams** has joined Edcel the UPS manufacturers as sales and tendering engineer. Formerly he was with Varta.

Holdam

Proffit

Williams



Greenhaigh

**Derek Proffit** at BOC Datasolve has been promoted from general manager, ICL sector to production director. Gerry Horton previously director, IBM sector, becomes customer service director.

**Colin Greenhaigh**, a former electronics salesman operating in Kuwait and the Gulf area, has joined Ferranti, where he will be an export sales executive with the military systems division.

**WINNER of a bottle of champagne (and a desk-top copier), Paul Vickery of Rediffusion had recorded the fastest microfilmed information retrieval time in a 3M competition held at the International Business Show in Birmingham. Without any previous training, he retrieved a single document from a quarter of a million in 12.72 seconds. Here (left) he receives his award from 3M Microfilm Group marketing manager Terry Plume. In the background are the 3M 50-cartridge Carousel and "500" page search reader-printer used in the competition.**

## Very Large Databases

PAPERS for the Fourth International Conference on Very Large Databases are invited by the organisers. The conference, which is to be held in West Berlin on September 13-15, 1978, will focus (though not exclusively) on the following areas: database design, database software engineering, distributed database systems, the impact of new technologies. March 1, 1978 is the deadline for complete papers to be sent to Prof J. A. Bubenko, Chalmers University of Technology, Fack, S-402 20, Göteborg 5, Sweden. Further information from Herbert Weber, Hahn-Meitner Institut, 1 Berlin 39, Postfach 390128.

## Soccer

## Winter Knock-Out

CLEAR leaders of Group 1 are Gryphon, after an excellent 7-1 victory over Lloyds. Group 2 is headed by the high-scoring Atkins team, whose recent results include a 9-5 defeat of NCR. Jadpu are top of Group 3 and Rank Xerox head Group 5 with a 100% points total. We have received no results concerning Group 4 fixtures

Results and Group Tables

**Group I**
**Lloyds 1, Gryphon 7**

| | P | W | D | L | F | A | Pts |
|---|---|---|---|---|---|---|---|
| Gryphon | 2 | 2 | 0 | 0 | 14 | 1 | 4 |
| Lloyds | 2 | 1 | 0 | 1 | 6 | 7 | 2 |
| Datasolve | 2 | 1 | 0 | 1 | 5 | 7 | 2 |
| Comp Wkly | 2 | 0 | 0 | 2 | 0 | 10 | 0 |

**Group II**
**Atkins 7, G & Duffus 2**
**Atkins 4, NCR 2**
**Atkins 9, NCR 5**
**G & Duffus 6, NCR 2**
**G & Duffus 1, JPC 3**

| | P | W | D | L | F | A | Pts |
|---|---|---|---|---|---|---|---|
| Atkins | 4 | 3 | 0 | 1 | 23 | 13 | 6 |
| G & Duffus | 5 | 2 | 0 | 3 | 14 | 18 | 4 |
| JPC | 2 | 2 | 0 | 0 | 6 | 2 | 4 |
| NCR | 3 | 0 | 0 | 3 | 9 | 19 | 0 |

**Group III**
**Jadpu 4, ICL 3**
**ICL 2, Jadpu 4**
**L Trans 3, J. Lewis 6**
**Jadpu 1, J. Lewis 1**

| | P | W | D | L | F | A | Pts |
|---|---|---|---|---|---|---|---|
| Jadpu | 4 | 3 | 1 | 0 | 14 | 6 | 7 |
| J Lewis | 3 | 1 | 2 | 0 | 9 | 6 | 4 |
| ICL | 3 | 0 | 1 | 2 | 7 | 10 | 1 |
| L Trans | 2 | 0 | 0 | 2 | 3 | 11 | 0 |

**Group V**
**Post Office 2, Xerox 3**
**SIA 7, Post Office 2**
**Xerox 6, SIA 1**
**Xerox 3, Post Office 2**

| | P | W | D | L | F | A | Pts |
|---|---|---|---|---|---|---|---|
| Xerox | 3 | 3 | 0 | 0 | 12 | 5 | 6 |
| SIA | 2 | 1 | 0 | 1 | 8 | 8 | 2 |
| Post Off | 3 | 0 | 0 | 3 | 8 | 13 | 0 |

**Roger Camrass** has left Plessey Telecommunications where he was marketing support manager, to become a consultant with Butler Cox. **Edward Goldblum**, who joins Butler Cox as a senior consultant, was formerly with the Arthur Young consultancy.

**Jerry Weston** becomes principal operational research assistant in London Transport's planning research office, where he has been working on computer-based projects.

**Guy Talbot**, general manager of 3M UK's printing, photographic and static control systems division, has been appointed a director.

**Alan Fynn** has moved to RTC Real Time Control, as UK sales manager, from Gross where he was point of sale manager.

**Mike Chester**, former System analyst/programmer, has joined QRH Software as programming manager with responsibility for RPG2 and Cobol training.

## DIARY

**DECEMBER 12**
Visit to Prime Computer, BCS, Bedford branch. Applications to branch secretary.
Objectives and methods of computer science education. S. Michaelson. BCS, Humberside branch. The White Rose, Hull. 19.30.
**DECEMBER 13**
16-bit microprocessors — F100L, 9900 micros. BCS Microprocessors Group, Polytechnic of Central London, London W1. 14.00.
Database technology, where we are now. Peter Prowse. Thames Systems Group, Thames Polytechnic, London SE18. 18.00.
Making a database work. Malcolm Robinson. BCS, Croydon branch. Fairfield Halls, Croydon. 19.15.
Control of distributed projects. Suzette Herald. BCS, Reading branch. The Griffin, Caversham. 20.00.
Why did we choose DEC KI10? Brian Castle. BCS First Time User Group. Royal Angus Hotel, Birmingham 4. 14.00.
**DECEMBER 13-15**
1st international online information meeting. Online Review, Tara Hotel, London.
**DECEMBER 14**
What should and what will happen to Cobol. J. R. Lucking. BCS Cobol Group. Polytechnic of Central London, London W1. 14.15.
Tomorrow's World, the mass market for computers. John Burnett. Association of Independent Computer Specialists. AICS, 9 Leicester Street, London WC2. 18.30.
Structured programming. Alan Cohen. BCS, North London branch. West Lodge Park Hotel, Cockfosters. 19.45.
Creative computing. Alan Sutcliffe. BCS, Teesside branch, Teesside Polytechnic, Middlesbrough. 19.00.
Trade unions and computer personnel, open forum. Representatives from APEX, ASTMS and NALGO. BCS, Edinburgh branch. Mountbatten Bldg, Heriot-Watt University, Edinburgh. 17.30.
**DECEMBER 15**
AGM/BSAL-80 for the Intel 8080/SIL Snobol for the 2900/Spitbol. J. Knott, Dr M. Garside, Dr A. McCann. BCS System Implementation Languages Group, Birkbeck College, London WC1. 10.30.
Management development. DPMA Central London branch. Control Data Institute, 77 Wells St, London W1. 18.00 for 18.30.
The use of microprocessors in robotics. Dr Paul Drazen. BCS, Guildford branch Robotics Lab, University of Surrey, Guildford. 19.30.
**DECEMBER 15-16**
Meeting. IBM Computer Users' Association Operators Group. Palace Court Hotel, Bournemouth.
**DECEMBER 19**
Miniconference on "minicomputers for information retrieval. BCS Information Retrieval Group/Aslib Informatics Group on Minicomputers for Information Retrieval. University of Manchester Institute for Science and Technology, Manchester. 11.00.
**DECEMBER 20**
Human reliability in man-machine systems, colloquium, Institute of Electrical Engineers, IEE, Savoy Place, London WC2. 10.30. Register with IEE.
A systems approach to pictorial pattern recognition — lecture series. Morton Nadler. Machine Intelligence Research Unit, Chess Lab, MIRU, University of Edinburgh. 10.30.
**JANUARY 3**
Computerised tomographical scanning, lecture. Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 5.00 for 5.30.
**JANUARY 5**
Management matters. Rt Hon Sir Harold Wilson. BCS, Merseyside branch. Adelphi Hotel, Liverpool. 18.00.
**JANUARY 9**
Integrated circuits — reliability, colloquium, Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 13.30. Register with IEE.
**JANUARY 10**
Practical Honeywell computing. Speakers from Honeywell Information Systems. Data Processing Managers' Association, Bull Hotel, Gerrards Cross. 19.45.
Why a bureau is the best solution for a first time user. BCS First Time User Group, Royal Angus Hotel, Birmingham 4. 14.00.
**JANUARY 11**
International telex switching systems. C. C. Harman, E. E. Daniels. Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 17.00 for 17.30.
What this DPM thinks of the independent computer specialist. Gerry Fry. Association of Independent Computer Specialists. AICS, 8 Leicester Street, London WC2. 18.30.
Visit to Young's Brewery and computer installation. BCS, Kingston-upon-Thames branch. Regional Management Centre, Coombe Road, New Malden. Tel: Numbers limited.
**JANUARY 17**
Effects on society of technological change. Barrie Sherman. Association for Computing Machinery. Polytechnic of Central London, London W1. 19.15.
**JANUARY 18**
Data communications, a personal view. John McNulty. Data Processing Management Association. CDI, 17 Neal Street, London WC1. 18.00.
The potential of digital processors in radio communication systems, colloquium. Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 10.30. Register with IEE.
Computers and the blind. Prof J. L. Bauce. BCS, North Staffs branch, Keele. Staffs Medical Institute, Newcastle-under-Lyme. 20.00.
**JANUARY 18**
Minicomputers, half-day seminar. BCS Hampshire branch/Southern Operational Research Group, College of Technology, Southampton. 14.00.

# Hungarian program cuts sort time by 70%

AS a by-product of its negotiations with the Hungarian computer industry (CW, March 10), London software house Business and Technical Systems (Bats), has brought to the UK an ICL System 4 sort program, claimed to be very efficient.

The sort was developed at the computer centre for the Hungarian telecommunications industry. Bats tried it out on selected installations in the UK, and has been rewarded with three orders, one requesting four systems.

One user reported that the sort made 70% saving on both elapsed time and CPU time over ICL's own sort.

There are only about 80 System 4 installations in the UK, so the potential market is relatively small. Many of the machines, however, are in government, universities and other establishments under pressure of economies.

Such installations frequently seek ways of exploiting the capability on their existing machines, rather than upgrading them, and the Hungarian sort could provide such an opportunity.

Bats is examining the possibility of making its own additions to the sort, and of transferring it to other machines.

# Rockwell gets US go-ahead on data encryption chip

**From Becky Barna in Washington**

ALTHOUGH IBM developed the algorithm for what was adopted earlier this year as the US Federal Data Encryption Standard (CW, September 15), the Collins division of Rockwell International has developed the first integrated circuit implementation of the standard. After stringent testing, the US National Bureau of Standards (NBS) granted Collins/Rockwell the first validation certificate for an encryption chip that complies with its standard.

The use of federal standards is voluntary, but because the encryption standard offers a high degree of computer security, its use is expected to be widespread throughout the government.

In addition to the standard for protection of computer data during transmission, NBS is developing other standards for applying data encryption to communications and data storage systems, according to Dr Dennis Branstad, NBS project leader for the data encryption standard.

Branstad says other anticipated uses of encryption include personal identification systems and visa validation.

Other companies, including IBM, are building data encryption hardware for NBS validation, but so far, Collins/Rockwell has been the only company to submit a circuit for testing.

## Successful Prelude

FIRST transmissions of company information via satellite, under the Satellite Business Systems experiment Project Prelude (CWI, September 5), have been successfully completed by Rockwell International, the US aerospace company.

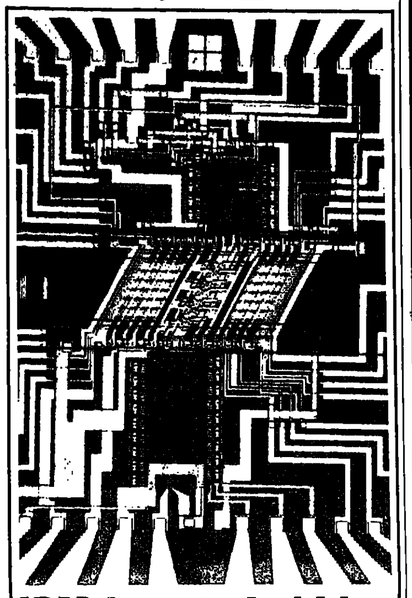
The trial lasted three weeks and Rockwell transmitted computer data, facsimile, voice, and television pictures between Pittsburgh and Seal Beach, California.

Some successful teleconferencing trials were also held.

For the data transmissions Rockwell used two Hewlett-Packard 3000 Series II computers and HP terminals and line printers.

## IDC Europa moves

THE firm that produces a wide range of newsletters, market reports and analysis on the European data processing scene, IDC Europa, has moved its London office from Camden Town to Chiswick. The new address is IDC Europa Ltd, 2 Bath Road, London W4 1LN. Tel: 01-995 9222.



# IBM boosts bubble memory density

MEASURING 1/84th of an inch across the parallelogram shaped area in the middle of the picture above is the heart of a radically new IBM bubble memory device that can store 1024 bits at a density of five million bits per square inch. This is about four times the density of bubble memory products currently available, says IBM.

The experimental device was developed at IBM's research laboratory at San Jose, California, and differs from existing bubble memories in that binary "one" and binary "zero" are represented by two different types of bubble rather than by the presence or absence of a bubble. For this reason bubbles in the new device can be packed more closely together — about 11.6 microns from centre to centre.

The two different types of bubble in the IBM device differ in the magnetic structure of the thin tubular domain walls that surround them.

Like existing bubble memory devices, the bubbles are propagated in a thin film of crystalline yttrium iron garnet, but they are organised, moved around and read differently.

They are held in a 32 x 32-bit lattice and are read by being shifted column by column to an access channel by magnetic fields set up by gold microcircuits on top of the film. In existing devices bubbles are organised in looped channels and are moved around by a rotating magnetic field created by a coil magnet surrounding the complete device.

IBM says that experiments with the bubble lattice concept have indicated that it holds promise for storing up to 10 times as much information in a given area as is possible with other types of magnetic bubble devices.

However, conventional bubble memory chips have much higher capacities than the IBM lattice device. The Texas Instruments TBM 0103 used in the TI 765 printer terminal, for example, holds 92K bits (CW, September 15).

## Tandem Computers offshoot in UK early next year

PLANS to establish a Tandem Computers subsidiary in the UK are at an advanced stage, and the US parent company is ready to offer its stock to the public.

Based in Cupertino, California, Tandem Computers was founded by Jim Treybig, formerly with Hewlett-Packard. The company specialises in multiprocessor minicomputer systems designed to provide high reliability in an online transaction processing environment.

Competing at the top end of the mini market, the Tandem systems are only cost-effective when they support 12 or more terminals and process at least one transaction a second. Programming is in Cobol and in TAL, a proprietary language said to be "on of Algol" and close to Coral 66.

Tandem opened its European office in Frankfurt earlier this year (CW, May 12). In Germany nine systems, each with two processors, are currently installed. Messerschmitt Bölkow Blohm represents Tandem in Switzerland, and an agency in Scandinavia is to be established shortly.

Recruiting is under way for the UK company which is likely to open early next year.

The US parent is offering 700,000 shares to the investing public at a maximum of $12 a share. The $8 million or so to be raised by the sale has not been allocated to any particular purpose. The shares on offer will represent about 20% of the total issued stock in Tandem.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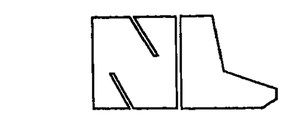

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Elements in Futuredata's Microsystem range.

## Futuredata introduces four new development systems

FOUR new Zilog Z-80 based microcomputer development systems, introduced by the Futuredata Computer Corporation of Los Angeles, offer the additional facilities of extended Basic, a Basic Compiler, a word processing package and RDOS, a disc operating system with relocatable macro assembler and lineage editor.

The range, called Microsystem, consists of two cassette tape and two floppy disc equipped systems, each of which comes with up to 56K bytes of memory, video display, ASCII keyboard, the disc or tape drive unit and operating system software. Optional plug-in modules are also available to permit the systems to be converted to 6800 or 8080 processors.

The systems feature one parallel and two serial I/O ports, real time clock, PROM bootstrap, eight-level vectored interrupt, and a DMA capability. The disc and tape operating systems include monitor, debugger, editor, assembler and copying utilities.

US prices for the range extend from $4,325 to $7,675.

# MICRO NEWS

Edited by Martin Banks

## Brunel study brings DoI funding of Catt projects to £50,000

THE decision by the Advanced Computer Technology Projects Committee of the Department of Industry to fund a one-year feasibility study at Brunel University of a pioneering new computer architecture developed by computer specialist Ivor Catt, brings the total ACTP funding of Catt-based projects to about £50,000.

Catt, however, will not be directly involved in the Brunel study, and has been given a small retainer to act as a consultant on the project. It is understood that there has been growing US interest in the development.

With £20,000 behind it, the Brunel study will be used to evaluate the new architecture, called Property 1A, which is based on the premise that actual computer processing can be carried out in a memory system, doing away with the need for a central processor in computer systems.

Under the leadership of Mike Lea at Brunel, researchers will consider the use of the architecture to handle one processing technique, data compression.

The other £30,000 from ACTP is being used to develop a hardware system known as a Computer Associative Module (CAM) on which Property 1A can operate. Based at Middlesex Polytechnic, the project has been running for more than two years.

The two projects represent a radical departure from conventional thinking on computer construction which Catt has referred to as "a Chinese copy of the Von Neumann machine" (CW, November 3) with its separate processor, memory and assorted peripherals. CAM and Property 1A offer an entirely different approach.

With CAM, computer hardware would become based on an array of complete semiconductor wafers that would require none of the complex testing, chip separation and encapsulation processes currently required in semiconductor production. In operation, the wafer would become a self-organising, 128K bit serial shift register. This would be achieved by a simple, external logic function instructing one of the chips diffused into the wafer to search the chips that immediately surround it for a good device. When found, the process would be repeated from that good chip until a chain of 128 chips had been interconnected. This process would be initiated each time the system was switched on, and would take an estimated five minutes to produce the required capacity.

Its main advantage would be that semiconductor manufacturers would no longer have to use the expensive post-diffusion production processes currently required and would no longer have to carry the costs of separating out the good chips from the bad. By organising itself to bypass bad chips on a wafer, CAM offers the potential to reduce system hardware costs very considerably.

Breadboard prototypes have already proved the viability of the technique, and the work at Middlesex is now geared towards designing and producing an integrated version.

Property 1A architecture is loosely based upon the "active" mode of operation of old mercury delay line memories, common in the late fifties. Here, data words were rotated around the delay line, and Property 1A utilises this concept to create a memory system that allows direct data manipulation to be achieved. Although it applies to a variety of hardware configurations, its application to the CAM hardware is expected to bring dramatic cost and performance improvements over conventional computer technology.

## EAROM prices cut by 60%

PRICE reductions of up to 60% on some devices in its range of EAROMs have been made by General Instrument Microelectronics, stemming from production economies realised from volume manufacturing.

The 1K, block erasable ER 1105 will now be £5.85 and the 4k, word erasable ER 2401 will cost £7.12.

These devices combine non-volatile data storage for up to 11 years with the facility to electrically erase and rewrite stored data at any time.

At the same time, the company is introducing two improved versions of existing memories. Replacing the 512 bit, word erasable ER 2050 is the ER 2051, offering an improved read access time of 3 microseconds. It sells for £7.35.

The 2K by 4 bit ER 2800 is superseded by the ER 2805, which offers an improved access time of 1.66 microseconds. This part will sell for £11.35.


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## For use in high temperatures

A RANGE of microprocessor hardware is now available from Motorola Semiconductor specifically intended for use in high ambient temperatures and severe temperature gradients.

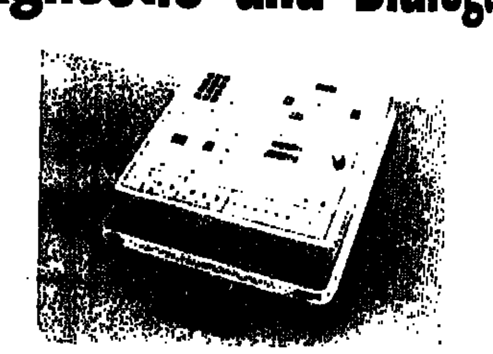
Capable of sustained operation over a temperature range of −55°C to +125°C, the range consists of the MCM6800 MTL processor, MCM6810 MTL 128 by 8 bit static RAM, MC6820 MTL peripheral interface adapter, and the MC6850 MTL asynchronous communications interface adapter.

## Plenty of memories

DESPITE the surge in demand for static memory components, Cramer Electronics has accumulated a considerable inventory of the recently introduced Zilog 4K static RAM, as well as the 16K dynamic device.

Five versions of the 4K part are available, each offering different access/cycle times, while three versions of the 16K dynamic memory are being stocked, offering access times of 180, 200, and 250 nanoseconds.


Data Communications Diagnostic and Dialogue



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The new Dynatech TC-100 is a microprogrammed data communications test set for use in tech control systems or as a portable testing device. Its unique design allows it to perform a wide range of troubleshooting duties, to locate and define faults that may develop in today's modern data communications systems. It simulates and tests software and hardware components of the communications network.

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## Racal goes into ATE market—with £2m worth of orders

THE Racal Group has decided to take the automatic test equipment bull by the horns with the announcement of the formation of a new subsidiary company, Racal Automation. It brings an initial boost of £2 million to the group's forecast of £200 million turnover for the current year, and new managing director John Engledew says the new company should be soon a major contributor to the group.

Racal became involved in ATE, as a user, through its Clansman military radio equipment, and has absorbed considerable experience in the field. The new company is heavily based on the original personnel who worked on the Clansman ATE equipment at Racal BCC.

As a latecomer into the ATE market, however, Engledew is convinced that Racal Automation has been able to take advantage of the latest state of the art technology in realising its product line.

The new equipment has certainly met with early successes. Sales have been made to the Ministry of Defence (Procurement Executive), Pye Telecommunications, and the Communications and Data Systems Division of Plessey.

Although the initial product range consists of six ATE systems, there is believed to be some significance in the choice of Racal Automation rather than Racal ATE as a company name, though it could be some time before that significance appears.

The product line has been given the "family" name of Rebate, and includes two systems aimed specifically at the direct testing of electronic components and subsystems for electrical and functional performance. Two further systems are included that offer Computer-Aided Fault Finding (CAFF), which can be applied to any situation where a logical, fault finding routine can be followed.

With a price of around £50,000, RTL 1 is designed to provide high speed testing of assembled printed circuit boards in both base workshops and factories. It employs the traditional "bed of nails" approach to component electrical testing but has overcome the main failing of such systems — failure for the "nail" to make contact, thus failing a good component — by utilising a software routine that checks all pins for open circuits.

RTL 4 is the most advanced system in the range, covering both component and subsystem function testing. It incorporates a technique known as parallel activity for simultaneous multiple parameter testing to reduce testing timescales, and the system is capable of operating up to 625 peripheral devices.

The two CAFF systems form a complementary pair of fault finding systems. Called CAFF 5 and CAFF 5M, they consist of a Computer Automation LSI 2&10 minicomputer-based system (CAFF 5) and a Motorola 6800 microprocessor-based machine. In operation, the systems provide the user with a plain English description of the fault finding procedure for the equipment under test on a video terminal. Operator interaction with the system is kept to a minimum to allow use by unskilled labour.

CAFF 5, although it can be used as a test station, is primarily intended as a program development station for the CAFF 5M, which is specifically designed for operation in remote locations. Once developed, the programs are loaded onto floppy disc storage for use with the 5M system.

This ruggedised version of Micro-CAFF RTL5M, a unique computer-aided fault finding system, has been specifically developed by Racal Automation for use in military field workshops.

## VME/K users set up group

USERS of the VME/K operating system on ICL 2900 computers have formed their own user group within the ICL Computer Users' Association. The group, chaired by Dr Brian Spratt, director of the Kent University computing laboratory, had its first meeting at the end of last month, when 20 users discussed their experiences of VME/K.

The group hopes that ICL will give members detailed presentations on VME/K development compatability with VME/AB, and networking.

Jim Golightly of Vickers Management Service was elected vice-chairman. Committee members are Ted Abram of Vestric, a wholesale pharmaceutical firm, Andrew Kettler from the regional computing centre at Edinburgh University, and Richard Thompson from the bureau Computel.

VME/K users and potential users interested in membership should contact Dr Spratt on 0227 66822, extension 627, or Peter Booth of ICL on 01-788 7272, extension 4251.

## State of the art of distributed processing

DISTRIBUTED processing in its various forms is the subject of a State of the Art Report* now available from Infotech. It comes in two volumes. The first is devoted to defining and discussing the main ingredients of distributed processing, including the technological, economic and organisational factors, and the second is a collection, of invited papers on the subject.

Contributors include David Butler, chairman of the Butler, Cox and Partners consultancy, who presents four examples of distributed processing as put into practice by three European organisations.

Anthony Bristow, marketing vice-president with CMC, discusses the relative benefits of distributed processing for the user department and the central management services group.

Different ways of distributing databases are outlined in a paper from one of several US contributors, Grace Booth from Honeywell in Phoenix, Arizona.

*Distributed Processing, Infotech State of the Art Report, 550p, £95, Infotech International Ltd, Nicholson House, Maidenhead, Berkshire. Tel: Maidenhead (0628) 32588.

## OP SPOT By Bernard Allen

### Hazards of the computer room

THE computer room is a potentially hazardous environment. It is often hectic and houses a vast collection of sophisticated electrical equipment which requires a high standard of maintenance and operation.

Yet the level of danger can be decreased and almost entirely eliminated when the DP manager (or whoever is responsible) plans the layout of the installation and defines the role of operations staff.

For their part, operations staff should be fully aware of their responsibilities for safety, and first consideration should be given to the prevention of fire, with efficient means of fire-fighting immediately available.

The computer room and all associated areas should be fitted with an automatic fire alarm of the smoke-sensitive type, with the control panel in the computer room or near security guards so that it can be promptly seen. Remote signalling to the fire brigade can be incorporated into such systems.

Many installations operate the computer on a 24-hour basis and often it is felt that the staff can deal with fire. In such a situation it should be remembered that fire can occur in almost any area and extinguishers should be placed at strategic points.

Regular fire-drills, though often tedious, are necessary, as is the training of one or more members of each shift in the handling of the various forms of equipment.

Several of the staff should be fully trained in first-aid and a comprehensive first-aid kit should be provided. A room with a bed is also desirable, so that should a member of staff be taken seriously ill he or she can be tended in comfort.

Considerable training should also be given to operators in the use of peripherals, for in this area negligence is a prime cause of accidents.

It is important that the operations manager should clearly define the extent to which his operators should clean the equipment. In most installations this is the responsibility of trainees. Yet to what extent can they be expected to perform such a function?

It is imperative that all equipment in the computer room is in good working condition, or put out of service.

Should an operator discover that a unit is in some way impaired he must report it immediately through the appropriate channel. And if the engineers do not respond promptly, it is the duty of the operations manager to complain to the person concerned or to the supplier.

In some cases the malfunction of equipment can have a detrimental effect on the operator's health over a period, rather than immediately. When the lid of a printer will not close the noise is quite considerable and could lead to noise fatigue.

Above all an operator should never be left in the computer room unaccompanied, and all staff should periodically be reminded of the need for concern.


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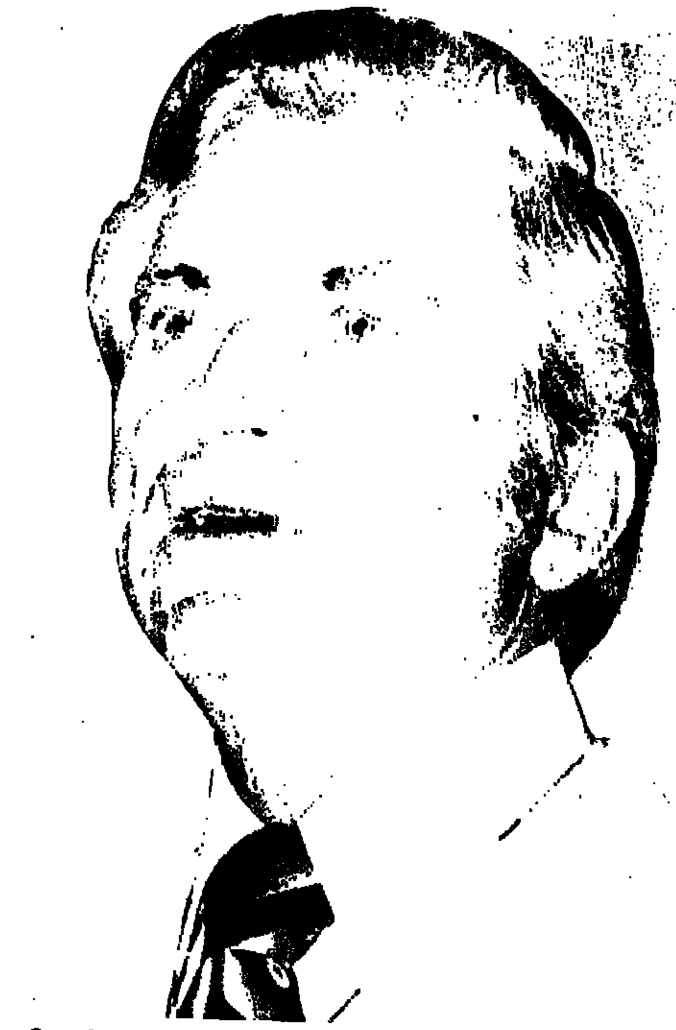
**On a whistle-stop European tour last week to talk to customers, Dr Gene Amdahl spent 24 hours in the UK. He addressed a group of investment analysts, visited potential users — and still managed to find time to give Computer Weekly an exclusive interview. Here he talks to TIM PALMER about a common world software standard, possible future plans for IBM, Amdahl Corp's investment plans, and the value of the Japanese connection......**

# Amdahl calls for a single software standard from all manufacturers



Gene Amdahl . . . chilling words for the non-IBM manufacturers.

THE community of computer users could and should demand a single software standard from all the manufacturers.

That is the view of Dr Gene Amdahl, founder and chairman of Amdahl Corp.

"Users have no alternative but to convert back to a *de facto* standard, sad as that may be. It is not reasonable to insist on the ideal — no-one knows what the ideal is," he said.

"It is equally unreasonable to insist that one should not follow the path that is available just because it is not ideal."

That path is clearly along the IBM operating software path — and for most large system users that means MVS.

"About 30% of our users are running MVS, and some have converted to it after installing their 470 with some other IBM operating system. But by this time next year, I anticipate that 70% of our users will be running MVS."

Amdahl believes that MVS is the main IBM operating system for the foreseeable future.

"If MVS does not last for a reasonable time, IBM will have made a very large investment for nothing," he commented.

"Most of the pressure to get rid of the earlier IBM operating systems is coming from IBM. It would be nice if we did not have

***"TO ask whether any of the earlier operating systems should survive is like asking if England should survive. Things do become obsolescent, but different users achieve different things with the same operating system."***

to support all the earlier IBM operating systems, but it is our users' interests, not our own, that we have to serve.

"To ask whether any of the earlier operating systems should survive is like asking if England should survive. Things do become obsolescent, but different users achieve different things with the same operating system. One user may be doing things with an old operating system that others who have sloughed it off a year before thought impossible.

"We have said that we will support the old operating systems for at least a year after IBM stops support.

"We will also continue to add to the last version of MVS in the public domain, so that our users continue to have available to them all the facilities offered by IBM, although not necessarily in the same way."

Amdahl had some chilling words for the non-IBM manufacturers.

"Univac and Honeywell are in a very difficult position.

How to get from where they are to where they have to be is a most challenging problem. They have to follow the path we have taken, but they have to serve their base as well.

"I really don't want to be in their shoes, but I'm not bleeding for them. They got themselves into the position they're in.

"Burroughs is different in that it is the only one offering a philosophically different machine. It has some specific advantages and there is psychological attractiveness elsewhere. Burroughs has demonstrated that it has the most interesting competitive machine to IBM, but in the long term I don't believe it is viable. There is less room for one alternative to IBM than there is for 20."

On Univac's 370 emulation facility for the 90/80, Amdahl commented that it was not necessarily an advantage or a disadvantage.

"If Univac is getting its users to run IBM software on the machine, then it is an advantage. Otherwise I think they're making a mistake."

Dr Amdahl is proud of his son's involvement in Magnusson Systems, a new company which plans to attack the lower end of the 370 line with plug-compatible alternatives.

"It is the most creative advance in small end computer design for a very long time. I admire what he has done very much. It's more than creditable, it's magnificent."

Amdahl, unlike many industry observers, is not unimpressed by the 3030 series from IBM.

"It was a Herculean undertaking to do what they have done in the time. But they have spent long enough diddling around with old technologies: there must be something they can do to improve the situation in the next generation."

But he is not impressed with the approach that IBM is taking to competition.

"They seem to be putting more effort into trying to place stumbling blocks in the way of competition rather than serving the best interests of customers. Most people think that the best way to meet competition is to serve the needs of your customers, and I'm surprised IBM doesn't see it that way.

"The next generation from IBM, possibly known as the H-series, and complementary to the bottom-end E-series, is thought likely to appear in 1979, and Amdahl does not dissent from this view. He told securities analysts in London on Friday that the pace of technological advance was speeding up and that the industry was now on a three-year rather than an eight-year technology cycle.

"The price cuts were designed to kill off the opposition, but there was a paucity of alternatives for IBM.

"But IBM is going to have to find some new area to concentrate on if it is to maintain its gross margins of 28%. The advance of technology will make it impossible to maintain those margins in its present market areas. I expect them to move to the automated office, as 50% or more of the workforce is now employed in offices rather than manufacturing, and the only

***"IBM is going to have to find some new area to concentrate on if it is to maintain its gross margin of 28%. The advance of technology will make it impossible to maintain those margins in its present market areas."***

way to improve productivity there is to improve the productivity of the employees."

Amdahl does not believe that his company has done IBM's business any harm at all.

"We haven't prevented IBM delivering a single machine; the company's daily income has not been altered at all."

Nevertheless, he told the analysts that in the sector of the market where Amdahl competes with IBM, he estimated that IBM's output was only four or five times that of Amdahl.

Despite the fact that the 470V/5 is a direct competitor for the 3032, Amdahl does not plan to introduce a V/4 to match the 3031.

"I think we are in the optimal sector of the market right now. In five years' time we could have extended down into a lower performance range, but at present we are serving the only portion of the market I believe it right for us to be in.

Although US reports have suggested that non-airline users are interested in IBM's IPARS operating system and software, Amdahl has not detected the trend, though he commented that it is the right system for any reservation application.

"We do have one user: American Airlines, which originally did not intend to use our machine for reservations has decided that it really is reliable enough."

The biggest customer by far is AT&T, which Amdahl says is still taking about 20% of the company's machines. With over 80 now installed, that means that AT&T has 16 or 17.

In Europe, a French subsidiary is likely to be established next year.

As for Amdahl's direct competitors, Itel with the AS series, Control Data with the Omega, and several others preparing to enter the market, Amdahl is not at all dismissive of them.

"As a citizen of the US I welcome them; they represent the free enterprise system. As a citizen of the world I welcome them as being in the best interests of the world. As a businessman I find them somewhat discomfiting. But I don't dismiss them just because they are doing something different from us, implementing 370 architecture in newer technology rather than designing completely new machines to run IBM software."

One of the headaches affecting Amdahl is the availability of memory chips.

"16K-bit memory chips are not available in the quantities we want, and even 4K chips cannot be supplied to meet our needs. We are having to ration our users, give them 95 cents in the dollar, a pound instead of a guinea."

With cash flowing into Amdahl's coffers from the machines the company is now shipping, 90% of which are sold, where does he intend to invest the money?

"We have a long way to go to match our principal competitor's cash hoard," he grinned. "We have to accumulate cash just for our needs and for the possible requirements of our next product announcements.

"We are offering leases, and not many have been taken yet, but if that changed, the cash position would alter very quickly.

"Cash is essential for investment, and we would like to be in a position where our cash is adequate, wherever we need it.

"We have no particular interest in acquiring peripheral manufacturers at present. There are plenty of companies making plug-compatible peripherals and they are in healthy competition; so it is better if we are not related to any particular peripheral manufacturer.

"However, if that situation changed and there were a shortage of competitive companies we might have to move into the market."

Several commentators have suggested that if IBM does succeed in locking Amdahl users out of the latest releases of its operating software, Amdahl could always take up the Fujitsu OS4 FIV operating system, which is designed to be fully comparable to MVS, and reported to be performing 10% above target in early installations.

"We have the rights to use

***"We have no interest in acquiring peripheral manufacturers at present . . . However, if there were a shortage of competitive companies we might have to move into the market."***

OS4 FIV at a reasonable fee," said Amdahl.

"It is a good system in concept, and will be available in a well-tested form before long. But customers would not be excited about changing from their present systems even for a performance improvement. Most customers take pains to avoid the risks involved in adopting anything which may require conversion or debugging activity."

Amdahl is by no means privy to Fujitsu's overall plans, and indeed commented to the analysts that there might well be a parting of the ways at some stage.

Although it has been denied by Fujitsu in Tokyo, he said he would not be surprised if it were Fujitsu which was talking to OPM leasing in New York about 370 plug-compatible CPUs (CW, December 1).

"It has to be either Fujitsu or Hitachi," he commented.

He was a little hurt at a comment about him attributed to Dr Robert Noyce, co-founder of Intel, which appeared in an interview in the French Press.

Asked what he thought of Amdahl, Noyce was quoted as having said he did not think much.

"To sell to the Japanese is one thing, but to sell the technology of your country to another country is quite another thing" he was quoted as commenting.

"I'm surprised that he should have said that," said Amdahl. "It indicates that he doesn't know what happened.

"Our agreements with Fujitsu were looked at by the US Department of Commerce and by the CIA, and both organisations concluded that what he suggests was not the case. They concluded that Fujitsu got very little technology and that Amdahl got a lot of money to make new technology available to the US. The Department of Commerce concluded that there was a technical gain to the US out of the agreements."

Fujitsu is transferring some of the assembly it does for Amdahl to its Californian factory.

"They are doing a modest amount of assembly in California, but we are increasing our demand on them, so they are actually doing more assembly in Japan as well. But even the assembly in Japan is from US components. Our purpose is to meet our volume objectives, and that requires a build-up that we couldn't manage alone.

"Fujitsu does a first class quality control job, and I think they're the finest partner we could find," he concluded.

## Bid for share listing

APPLICATION for a listing of its shares on the American Stock Exchange is being considered by Amdahl Corp. Amdahl shares are at present traded "over the counter" and are not listed on any exchange. Quoted stock prices are based on the last transaction reported by the US National Association of Securities Dealers.

The shares in a company are much easier to trade when they are listed on an exchange and as a result tend to be held by a greater number of shareholders than they would otherwise be. This in turn makes it easier for a company to raise new capital for expansion since each shareholder is required to put up less of the total required.

## Shipping data service

THE shipping information resources of Lloyd's of London and Lloyd's Register of Shipping, merged only last year (CW, February 5, 1976), are to contribute to a larger international information network.

The new information service will be available on the General Electric Mark 111 bureau network, managed in the UK by Honeywell. It will be based on an existing Mark III service, the Marine Information System, introduced last year by Marine Management Systems Inc, of Stamford Connecticut. This information will be augmented by the large Lloyd's databank on ship characteristics and ship movements.

A joint venture company has been formed to market the service, and will be known as Lloyd's Maritime Data Network. Other parties to the formation of the company are Van Ommeren International of Rotterdam and Fairfield International Corp of the US. These are contributing capital, business contacts and knowledge of world trade.



## ACCESSORIES AND ANCILLARIES

# Data processing without due care and attention

By Roger Frampton

**The efficient running of a computer department and the effective use of computer output depends to a great extent on the adequacy of the ancillary equipment. Paper supplies, the security system, cleaning equipment, etc, are all small but vital factors in machine room housekeeping.**

**John Dribble, drawing on his experience, explains the importance of efficient cleaning services, and Bernard Allen reminds us not to forget the operators who have to use the equipment.**

**In this opening article, Roger Frampton, managing director of IDC Europa, suggests that only about five per cent of DP managers have taken proper care of their installations.**

THERE are of course lies, "other sorts of" lies and statistics according to whoever it was and generations of plagiarists since. For those of us in the UK computer industry, the statistics are most likely to come from IDC Europa, whose figures, if contorted, can be made to show that management from less than five % of UK computer installations qualify to stop reading this article now.

Take a few moments to answer some questions honestly — not how would you save yourself from embarrassment at management interrogation — but the honest truth.

Could you cope with your data processing schedules in the face of a prolonged series of irregular power cuts? If the answer is no, don't feel too bad, because probably two-thirds of UK installations, due to the lack of standby power supplies, could not do so either.

Is your installation properly protected against the potentially irreplaceable losses following fire? The odds are again on a negative answer, since only three per cent of sites recently interviewed use a fireproof strong room and only 40% a fire detection system.

Lack of security is next. There are plenty of people who take things that do not belong to them and industrial espionage makes thieving sound almost romantic. If that does not worry you, then how about a malicious ex-employee or a member of the public with a grievance against computers? Most favoured security devices are "special locks," but even they are used in only 30% of installations.

So few computer installations shred their computer output for security that the sample taken was considered by IDC Europa researchers to be "so small" as to be untrustworthy.

And yet, if your old punch cards, tape and printout paper are not worth destroying for confidentiality then surely it is a positive move for ecology. Indeed, paper can have a commercial as well as sociological value when saved for re-cycling.

If a malicious thief breaking in during a power cut and setting fire to your computer sounds like a risk you are prepared to run, then are you among the 45% of the sites who use devices or services for the cleaning of magnetic tapes and discs? How can it be so few when we all know of the dangers inherent in the corruption of data?

And, where are the precious tapes and discs kept? Mostly on racks and shelves with only 46% in cabinets and 37% in a safe.

But, if we get on to environmental content in any detail, one might seriously question the soundness of mind existing within the UK computer industry.

Can I be accused of being a prophet of doom — or worse profiteering from doom? Since the statistics quoted come from IDC Europa research, I admit in the affirmative to both these points.

Thousands of people recently attended Compec, a super exhibition for the computer industry, but what do they remember it for? Minicomputers, peripherals, high-speed printers, microprocessors, graphics; but what about fire extinguishing, prevention and warning equipment? How about standby power generators? Did you check out on the latest magnetic media cleaners and inspectors, cabinets, trolleys, air conditioning, heating and humidity controllers, vending machines and background music, etc?

If you, as a user, feel I am giving you a hard time, what about the suppliers?

What do computer salesmen mean when they talk of "normal office environment"? A normal office in, say, New York, has to cope with polluted air that may be more humid or dry, hot or cold than any DP manager from Wigan to Worthing can imagine unless he has experienced it. Consequently, a normal New York office may be controlled between 50 and 55 per cent relative humidity, and 18 to 24 degrees Centigrade. With our more intemperate climate our normal office environment is often less than perfect a condition for electronic data processing equipment.

Do computer salesmen adequately describe the full implication of the installation of data processing equipment, especially to the first time user market? Probably not, but they are human beings toiling in an imperfect world and invariably competing with the mind's-eye picture of a computer working in a normal office environment and using the shelves and filing saved by doing away with the redundant paperwork.

Fire, theft, storage, power cuts and environmental control are all, or should be, to the fore in matters related to the material side of a company's business. Now what about us humans?

While concern is being expressed about the effect of VDUs on operators' eyesight, a survey is being conducted into the effects of prolonged viewing of terminal screens. Let us hope that no negative conclusions are drawn — partly, of course, because of the health and happiness of operators, but partly because of the effects on data processing, the re-negotiated terms and conditions and the industrial compensation, etc. It does bear thinking about.

While on the subject of industrial injury, have you felt a twinge in the back when you should be using a stationery trolley or bruised yourself on a sharp edged desk or slipped from a chair while changing a lighting tube?

The British Standards Institute, in collaboration with BETA and the Furniture Industry Research Association, has produced BS5459 which has done much to establish criteria that will boost the reputation at British office furniture in both domestic and export markets. This seems to me a positive and an acceptable step in the right direction towards improved conditions of data processing. But I am not so sure about recent legislation in West Germany which will shortly provide for the possible imprisonment of data security officers following thefts of personal or business information from computer sites.

Take into consideration the low cost per employee per day and weigh it against the potential improvement in quality of life and staff relations, then how can you not look seriously at flexible working hour systems, air conditioning and background music, etc, especially for those without whom the most expensive processor will not perform the data preparation people?

I believe the standard of British data processing management to be as high as anywhere in the world.

However, to avoid complacency, I should like to think that they would listen with more attentiveness when suppliers of equipment have something to say. Only then will we be data processing with due care and attention.

**To keep dirt and dust carried on shoes and the wheels of trolleys out of the computer room, constructors John Brown has fitted a Dycem contamination control screen at the entrance of the clean area. The permanently tacky surface of the plastic mat traps all dust coming into contact with it. The screen, supplied by the Datastor Division of The Shannon Ltd, is washed and squeegeed to remove any build-up of dust.**

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# Wanted: better contact and liaison with users

## By John Dibble

This is probably what it looks like underneath your computer room floor, and it's here that dust and dirt can collect if effective cleaning routines are not established. This spotless installation is at IBM Cosham.

IGNORANCE is certainly not bliss where computer cleaning is concerned. Taking the cleaning of the computer installation for granted is still, unfortunately, all too common. Providing the cleaning operation is reasonably smooth — rubbish is duly dumped, cups cleared and the floor more or less polished — then computer management often leave well alone.

The fact that cleaners and installation management seldom meet puts a large degree of responsibility on specialist cleaning organisations. Points of contact are, at the best, remote and at the worst, barely discernible. A scribbled punch-card message strategically placed where the DPM's secretary hopes the cleaner will take note and change the washroom towels, is a common communication method. Similar procedures are adopted when a new anti-static mat for the tape library is required.

A cleaner's life is by no means a happy one. It is not unknown for a cleaning team to arrive on site during the harassment of a complete refurbishment or equipment upgrade. No one had thought to warn the cleaners of the impending activity — nor the subsequent requirement to make good the floor areas revealed by the change round.

There is no doubt that for their part, cleaning operatives would welcome a channel of communication — providing space can be found between the mounds of stacked stationery besieging corridors and store rooms. Working within strict constraints that on no account should equipment or materials be disturbed, the area of cleaning activity often becomes limited. Disc packs are left on the computer room floor while piles of print-outs are spread over all working surfaces. Should one single sheet, however, be mislaid, there is no doubt that the cleaners will get the blame.

Not all blame, of course, necessarily rests on the installation team. There are still many cleaning organisations which, given the opportunity, could well spread alarm, despondency, — not to mention water — into any installation. The time really is ripe for computer cleaning to be recognised as a skill to be undertaken only by qualified organisations.

Getting what you pay for is very true in most walks of life. But in the case of computer cleaning, the ultimate price paid could well be very high. For many cleaning companies, keeping up with techniques is a non-starter.

As was mentioned recently in Focus (CW, November 3), many cleaners couldn't recognise the difference between a fire bucket and a tape drive. Such organisations are lagging the industry by several generations. Critical slope planes are more likely to relate to the slope of the computer room floor than magnetic media. Pollen and humidity restraints involve the shutting of installation windows.

Keeping pace in computing cleaning techniques is a vital part of the specialist's role. Failure by the cleaning team to identify potential dust hazards for example, could well pose a threat to the entire computing operation. Many specialist cleaning companies now provide a service covering three distinct levels of operations.

Bringing a new or re-vamped computer complex up to operational scratch is a task which calls for a range of cleaning resources. The state of the installation following the departure of sundry builders, engineers and technicians, leaves much in the cleaning way to be desired. Before the highly sensitive computer equipment can be wheeled in, every inch of the environment should receive attention — particularly above the false-ceiling and below the floor. All trunking should be inspected — with an ducts free of debris.

It took, for instance, Corbett Cleaning three and a half weeks to bring the new IBM installation at Cosham up to operational standard. During this period, the cleaning team took up residence in mobile caravans. Care and attention at this point in installation time, pays dividends — all the way along the subsequent cleaning and operating line.

Dust and brick particles are a particular threat to new installations. These items have a nasty habit of turning up on the DP scene after a period of several months, resulting in considerable problems. One installation was so plagued by floating debris that the complete operation had to close down while the air conditioning trunking was stripped. At the same time all discs and tapes had to be checked and cleared. An expensive exercise both in time and money.

**If you take your clean computer room for granted, then don't be too surprised if things start to go wrong, especially when you have just re-arranged it, warns John Dibble, of Corbett Cleaners. Here he describes some of the many problems that result from this attitude and calls for a new deal for cleaners. Dibble believes that the cleaners should report to the DP manager, not the office manager, to ensure better liaison between the people most closely concerned with the operation.**

A periodic cleaning and examination of the computer environment should be scheduled for every quarter. All potential trouble spots should receive attention. Regular maintenance eliminates the build-up of such hazards as printer-paper dust. The cleaning operation should, if possible, be performed when the system is shut down, normally during the night or weekends.

All too often computer cleaning is in the incapable hands of the office "mop and brush" brigade. A quick flash round the computer room with brush and duster could well inflict more harm than any amount of neglect.

Corbett cleaning team is equipped with a working kit which includes: Spot removal for PVC carpets and tiles; anti-static fluid; filtered, disposable vacuum cleaner bags.

Normal installation rules include the wearing of dust coats and overshoes. Outerwear has to be left outside the critical computer areas.

There is no doubt that standards of service are at long last becoming an accepted factor of installation cleaning. Corbett Cleaning for example has been involved with "private patients plan" computing activities from the days of pre-sub floors to the present day top class environment.

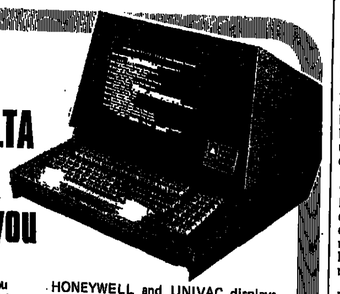
Misunderstanding still seems to prevail in the cleaning working area. No specialist cleaning company, for a start, would contemplate the use of water or dusters anywhere near the computer hardware. The average computer engineer would justifiably go beserk if he saw a tank of water being carried into the computer room for floor cleaning purposes. Dry foam cleaning is the only approved method for carpet tiles while dry cleaning is suitable for PVC tiles.

Even so, this message has yet to filter through to such bodies as the British Institute of Cleaning Science and Guild of Cleaners. Its current publication for cleaning computer accommodation only goes as far as suggesting that "the use of water for cleaning in the computer room shall be kept to a minimum."

Danger spots include the storing in the computer room of cardboard boxes. Such items are noted for spreading dust and pollution in all directions. Highly polished surfaces are also a hazard — not just to life and limb. The build-up seal of emulsion polish could well take over a year to remove. Once again dry cleaning is the only practical method of keeping floors in shape. Limiting the number of personnel allowed to the computer room is sound advice and so the environmental pollution should be kept to a strict minimum.

Perhaps the key to cleaning satisfaction is in the area of liaison and contact. Cleaners should be responsible to the computer management, not the office manager. The chain of authority should be limited directly between the cleaning team leader and DP management.

Trust and responsibility is the accepted work mode of specialist cleaning teams. The cleaning management has a responsibility to its users and a trust is forthcoming from the partnership of confidence and guarantee.

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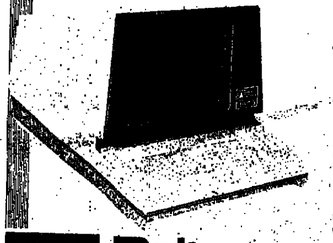

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# What good design can do for efficient running

## By Bernard Allen

PICTURE the computer room of the future on a typical evening shift.

The specially designed lighting system is dimmed as a group of operators dance upon the anti-static carpet tiles to the pulsating beat emitted from the newly acquired piped-music system.

They pause occasionally to mount a tape or disc and often make a swift trip to the store room because a printer had run out of stationery.

Their frequent journeys to the store room are enjoyable. They can, for instance, admire the way in which the room is decorated with the tasteful and scientifically-tested wallpaper and paint. They can also discuss the culinary delights being prepared in the oven in the operators' rest room.

In this picture of the computer room, all the accessories and ancillaries may be right, but there is one deliberate mistake — the operators should not have to make continual trips to the store room because there should be adequate stationery stocks close to the printers. Unfortunately, the real world is full of such elementary errors.

Shortcomings like this in the computer room are too often caused by the failure of DP management to realise the true value of their so-called accessories and ancillary equipment, and also, of course, of their operations staff.

As far as the operators are concerned, anything which makes their task easier is welcome. They are the people who actually work in the area and so are in a position to gauge the true worth of certain ancillary equipment.

The lay-out of the computer room will have a significant effect upon the efficiency and productivity of the department. A lack of foresight at the early stages of planning often leads to difficulties and annoyance later on.

A common example, as illustrated above, is the misplacement of the printers in relation to the stationery store room. It seems ridiculous that operators at some installations have to go back and forth to a store room situated at a distance from the printers and no storing facilities are near the peripherals.

The trolley is another piece of equipment the value of which is often underestimated. Disc packs can be stored and moved on them, which again relieves the operators of a considerable amount of effort.

Smaller units are often used as VDU stands which prove extremely useful when a particular VDU is out of service and another has to be moved into position as a replacement.

Racks for the storage of magnetic tapes also ease the operators' task. Fixtures which enable labels on the tapes to be displayed save a considerable amount of time when the operator is searching for a volume in response to a system message. Again, the units should be close to the peripherals involved in the operation.

Audio inter-communication systems are of great practical importance in the larger installations. Often they provide the quickest and most efficient method by which the master console operator can relate any information to his colleagues tending the peripherals.

Magnetic wall charts have many applications both in the computer room and the other related sections. They can be used for scheduling work for the coming week and also to record any system resources which may be unavailable due to maintenance, etc.

Other charts used in the computer room are those which monitor the humidity and temperature and so provide the staff with a method of keeping a close watch on any significant variations. These are often linked to an alarm which is activated should the temperature or humidity vary outside specified limitations.

Such early warning systems are of great value as the operators can contact the air conditioning engineer and so prevent unnecessary downtime.

With faulty air conditioning systems the fire hazard is extremely high and the prevention of this in the computer room is of paramount importance.

**Operations staff have to live with the decisions of DP management; and those decisions do not always make the operator's life any easier. Bernard Allen takes an operator's view of the role of accessories and ancillaries and discusses how vital it can be to the efficient running of a computer room.**

Both the local police and fire brigade headquarters should be informed of the presence of a computer complex, and their advice should be actively sought. Further information can be acquired by referring to Fire Protection for Electronic Data Processing Installations, published by the British Standards Institution, 101 Pentonville Road, London N1 9ND.

Automatic extinguishing systems of the smoke detection kind are widely used throughout the industry. Also, there are many types of equipment intended for manual use, each of which has a specific application relating to the cause of the fire.

In this respect it is imperative that several of the operations staff are fully trained in the use of fire fighting equipment and that all are aware of the methods of fire prevention. Strict regulations and fire drills at four in the morning may seem tedious, but are vital more this less for the wellbeing of all.

This hazard again stresses the need to use ancillary equipment in an appropriate manner. At one installation, for example, printed output was stacked near the fire exit, thus blocking the intended route of escape. Fortunately it was discovered by the fire officer and the situation rectified.

A fireproof safe is an asset to a company, and is particularly valuable to the computer department. It can be used for the storage of back-up tapes and can be placed near the computer, which would relieve the operator of the tedium of transporting the tapes to and from the computer room.

The security of an installation is worth consideration during the planning stages and diligence in its day-to-day running is particularly so during the evening and night shifts when an installation will be vacant apart from the operations staff.

All installations enforce security procedures to some extent, using one or a combination of methods. The reception of most installations is manned by security guards and the degree to which company employees and visitors are vetted depends on the importance the firm attaches to it.

A common method is to issue all staff with security badges or passes which usually include a photograph, the person's grade or position in the company and are signed by the employee.

Some companies employ systems intended to permit only operations staff to enter the computer room. In such cases the operators are issued with a card or a key which automatically activates the entrance to the computer room. The various devices available, of course, are useful only if used in the correct manner.

The level of security maintained in an installation and, specifically, to the computer room depends to a great extent on the attitude of the personnel.

An important factor affecting the attitude of the operator to his work is the provision of a comfortable rest room and facilities for the storage, preparation and cooking of meals during the evening and night shifts.

Micro-wave ovens provide a quick method of heating food, so that meals can be prepared and cooked during the day and reheated when required.

Such equipment is beneficial to the company as well as the personnel.

In the short term, the staff are less inclined to visit the local every evening, and in the long term, it restricts the labour turnover, which is often related to the concern accorded to the welfare of the staff.


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ACCESSORIES AND ANCILLARIES

# How to keep going during power cuts

NOW available from Modular Power are two power units, one being an AC supply interrupter and the other a DC load type.

Designed as a method of simulating mains supply interruptions, the AC supply interrupter is ideal for checking the hold-up times of power supply units and electromechanical device release times, said Modular Power.

There are two operating modes available: switched and manual. In the switched mode, the unit continuously interrupts the supply to the equipment under test, from ½ to 2½ cycles in ½ cycle steps, depending on the setting of the "off" time control. The rate of interruption can also be pre-set on the front panel.

In manual mode, the interrupt period is from ½ to 7 cycles in ½ cycle steps, again using the front panel control.

In either mode, the interrupter will operate from 100 to 250 volts AC, 50 to 70 Hz (factory set) at a maximum of 10 amps rms.

Designed to handle DC loads up to 45 amps, the Type 4334 can be controlled in either of two modes, said Modular Power. These are from its own front panel or from a remote source such as an automatic test installation.

Applied voltage can be up to 30 volts, depending upon the choice of one of three possible ranges. Range one is for operating voltages of two to nine volts, 0-45 amps; range two is for two to 18 volts, 0 to 22 amps; and range three is for two to 30 volts, 0 to 14 amps.

The maximum wattage is 405 watts on ranges one and two with 420 watts on range three. This one can be set at the factory within these maximum parameters: 420 watts, 45 amps and 40 volts.

An eight-line binary code can be used for automatically programming the Type 4334 in ¼-amp steps from 0 to 45 amps. A further two lines are available for load on/off control and for zero volts. Standard TTL voltage levels can be used for auto programming.

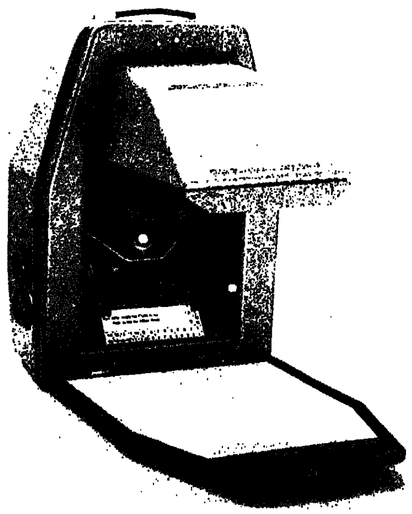
**Modular Power Ltd (CW), 28 Sun Street, Waltham Abbey, Essex. Tel. Lea Valley (0992) 711922.**

## Battery packs

USERS of Sweda 250, 350 and 450 electronic cash registers can now obtain back-up battery power packs from the makers.

The changeover from mains to battery operation is automatic following a power failure. When the mains supply is restored, the battery is automatically recharged, whether the cash register is switched on or off. The unit needs no maintenance and its overall dimensions are 370 x 160 x 185 mm (14½ x 6¼ x 7¼ inches).

**Sweda International (CW), 27 Goswell Road, London, EC1M 7AL. Tel. 01-253 3090.**



**The Lensman Mark 5 portable microfiche reader from Microscot, is designed for educational, scientific and library use. It can also be used as a wall projector.**

## Portable fiche reader

A PORTABLE low cost microfiche reader has been introduced by Microscot. Called the Lensman Mark 5 (pictured left) the reader has downward projection, placing the image on to a white screen in the natural reading position. It is suitable for educational, scientific and library use as well as for micropublishing programmes, with microfiche, jacketed microfilm and COM fiche.

The image is thrown downwards on to a built-in screen on the detachable front flap or a sheet of white paper on the desk.

Diagrams may also be measured or traced and the reader may easily be turned to read side-facing material or raised up to increase the magnification, said Microscot.

When laid on its back, the Lensman can be used to provide wall projection for small meetings.

A removable panel in the back of the case gives access for replacement of the lamp, which is a 12 volt DC tungsten halogen type.

The basic lens has a magnification of 22 times for reading microfiche to COSATI or NMA specifications filmed at between 20 and 24 times reduction.

An alternative lens gives magnification of 34 times for reading 42/48 times COM fiche or conventional fiche filmed at similar magnification.

A floating lens swinging arm system will give a continuous in-focus condition under all operating circumstances. The alternative lens is stored in a plastic mounting on the side of the chassis for ease of access.

The reader has a door and screen size that will accommodate both COM and A4 images. Two pairs of control knobs give rapid and positive image location using either the left or the right hand.

Frame location scales are calibrated to suit COSATI (five rows of 12), NMA (seven rows of 14) and COM (14 rows of 16) standard and Eurcom formats.

The reader meets the requirements of BS 3861 and a three amp cartridge fuse has been introduced on the outside case as has the plastic rocker switch. The detachable mains plug and socket conform to the new EEC regulations. Lensman costs £140 and discounts are available for bulk orders.

**Microscot Ltd (CW), Merit House, Edgware Road, Colindale, London, NW9. Tel: 01-452 7527.**

## Line printer controller is 'transparent' to diagnostics

A WIDE range of line printer controllers for Digital Equipment PDP-11 and 8, Data General Nova, Hewlett-Packard HP21MX and Interdata computers is available from MDB Systems of Orange, California.

The plug-in controller can interface these minis with printers from Centronics, Data Printer, Dataproducts, Data 100, MDS, Tally, Potter, Houston Instruments and Diablo with its 2300 series. A controller for the DEC LA180 is also available.

MDB points out that its controllers are transparent to host computer diagnostics, drivers and operating systems and that operation and programming with them is exactly the same as described by the computer manufacturer.

Each controller comes in the form of a single printer circuit board that occupies one chassis slot. The board can come with a 15-foot cable or with a long parallel cable allowing operation up to 3,000 feet away.

**MDB Systems Inc (CW), 1995 North Batavia Street, Orange, California 92665, USA. Tel. (714) 998-6900.**

## It cuts both ways

A PAPER shredding unit, the Model CC9, which cuts across the paper as well as parallel with its length is now available from Ofrex Ltd of London.

The CC9 produces 1 mm x 10 mm paper chips which, according to Ofrex, ensures security of all discarded documents.

The CC9 has been added to the existing Ofrex Fordiograph shredder range and is a development of the Fordishred 9 which employs parallel cutting only.

According to Ofrex, the design of the CC9 eliminates the overheating problems previously associated with cross cut shredders.

Other CC9 features include a 216 mm (8½ inch) throat which can accept five or six A4 sheets in one pass when working at a rate of 60 feet of paper per minute. The maximum speed is 85 feet (18.3 metres) per minute.

The CC9 is a table top unit weighing 446 mm (17½ inches) wide, 453 mm (18 inches) deep and 223 mm (8¾ inches) high. It can be supplied with its own mobile trolley.

**Ofrex Ltd (CW), Ofrex House, Stephen Street, London W1A 1EA. Tel. 01-636 3688.**

## Removing the carbon as well

A LOW cost decollator for separating two-part computer stationery and removing interleaved carbon has been introduced by James Wilkes.

The Mini-Deleaver costs £280. It features include fully adjustable speed control, an easily removed carbon winder and trays for the separated forms.

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**James Wilkes and Co., Parkfield Road, Bilston, Wolverhampton, WV14 6QG. Bilston 4961.**


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# Long term effect of the Threshold scheme on DP

## By George Penney

THERE is a national shortage of experienced data processing staff. Anyone with two years' programming experience — regardless of how good or bad that experience — has a wide range of jobs open, and not just in the UK.

The National Computing Centre's study "Job trends in data processing"[1] put the required annual growth in the number of operators, programmers and analysts required, to keep pace with current expansion, at 10,000; one of the major recruitment consultants recently estimated the current national shortage as 20,000.

To put these numbers in perspective, the total output of the Threshold and TOPS training schemes in 1977 will be between 700 and 800, rising probably to around 1,000 in 1978.

Initial training can represent a substantial investment — and with no guarantee of any return. To take a trainee programmer to the stage of producing working programs, without the overheads of constant supervision or multiple test runs, £5,000 is probably a very conservative estimate.

**The National Computing Centre's Threshold training scheme for school leavers combines on-the-job experience with classroom teaching. GEORGE PENNEY, NCC careers projects manager, reviews the scheme's first year and reflects on its possible long-term effects on the data processing industry.**

One can hardly, then, blame those employers who seek to protect that investment by taking none but graduates as trainees.

Even if they realise — and many DP managers do now realise — that the level of intelligence needed to write code in high level languages is substantially below that needed to obtain a degree, they are happier to employ someone at a task he can perform easily than to risk the relatively unknown quantity represented by the school leaver.

There is the reasonable hope, anyway, that the graduate, being more mature, will be capable of other things even should computer programming not prove the right answer.

But how many graduates find themselves in the DP salary trap, and so remain in a job to which they are basically unsuited? How many others leave in a search for greater intellectual stimulus, just when they were on the point of becoming useful?

What kind of sense does this make for the firm, the individual or the country?

The settled and stable DP department or organisation has a need of people who will be prepared to stick to the same job, becoming more and more proficient, perhaps for as long as that job exists before being overtaken by technological change. This is something that the more able graduate does not expect and is not prepared to do.

Thus, while the policy of restricting traineeships to graduates may work well for a proportion of the DP community, if it were pursued by all employers, it could only be a recipe for unrest.

The days when wrestling with machine code provided a continual challenge to the best brains are long since gone; now, the greater part of the work required in applications programming demands no more than moderate intelligence.

However, intelligence is far from being the only factor, and is perhaps not even the most important one.

On the Threshold scheme, the trainees choose, at about the half-way stage, whether to train in programming or operating, and there is no relationship apparent as yet between this choice and level of general intelligence as measured by standard psychometric tests.

Essentially, the people we are looking for in the Threshold scheme are of moderate intelligence, capable of learning practical skills, and with other abilities which will enable them to apply those skills, once acquired.

There are, at present, 14 courses running, with about 270 trainees. The course is not tied to the academic year, since periods of industrial placement can bridge the college holidays. By March 1978, we plan to have 500 trainees on courses.

The wastage, so far, has averaged around 10% of intake. This includes withdrawal through illness and return to full time education, as well as the simple discovery that "DP is not for me."

Movement into DP jobs during the early part of the course has been much more significant, averaging around 25% of the total intake by the half-way stage.

As most readers are probably aware by now, we do not apply, in recruiting for Threshold, the educational criteria applied by most employers in recruiting DP staff.

We find no evidence that either a degree or a given number of A or O-levels makes someone necessarily the right material to become a computer operator or programmer.

While such success is of course a part of the biographical data considered in any recruitment decision, it is, we believe, far from being the most important.

Whether or not we accept a candidate depends on his having the right combination of abilities as measured by discrete and complementary standard psychometric tests, and of personal qualities as judged in a carefully structured interview.

As a result, there are now computer operators and programmers in various parts of the country who had been unemployed for between three and 15 months after leaving school and would still, in all probability, be unemployed but for Threshold.

As most employers will readily concede, such people, lacking the conventional examination results, would not even have been granted an interview, and the talents they have now been able to demonstrate would never have come to light.

Currently, total cost per trainee finding a job in DP is running at about £2,000. This includes the selection process, college fees, books, the training allowance of £19 a week and all costs of administration.

I estimate this compares favourably with the total cost of recruitment and training, including a comparable period (24 weeks) of practical experience in any organisation employing DP staff.

We select the colleges that will teach the Threshold course on the basis of their previous experience in teaching DP and the practical DP experience of the lecturing staff.

We specify the syllabus and provide course material, but the quality of the course depends above all on the enthusiasm, as well as the experience, of the course tutor.

We have so far been fortunate in finding tutors dedicated to the cause of converting unemployed school leavers to desirable employees, and placing them in employment.

Their success can be judged from the fact that, from the first three courses, there are only four trainees not yet offered full time employment, and around 50% of the trainees on the next four courses are already placed.

Initially, we were funded by the Training Services Agency for one year only. They expressed their confidence in the way we were proceeding by doubling the funds for the second year, and the signs are that the scheme will be funded for several years to come.

The representative of the TSA who spoke at the first presentation of Threshold certificates in June said that they felt the scheme to be so worthwhile that it was their hope that it would be continued, with funds from industry, even after unemployment had eased.

There are those who consider it wrong for trainees to take a job before the end of the course; what I consider an even more extraordinary remark, made in my presence by a DP manager, is as follows: "Considerable sums of money are being spent in producing graduates; surely it is wrong to train school leavers, with no qualifications, to take the bread out of the mouths of graduates."

It is my view, as a graduate, that graduates are better equipped to make their own way than school leavers, and, more especially, than the school leaver who has not fitted the educational machine.

Let graduates fill jobs suitable to their ability and let others, whose ambition does not run quite so high, operate computers and write applications programs and become better computer operators and programmers.

I believe a few years of output from the Threshold scheme may well change the face of data processing, by injecting just such people where they are needed — though I can already identify a few Threshold trainees who will be managing staff, including graduates, in 10 years' time!

REFERENCE

1. Job Trends in Data Processing, Hansen P. and Penney G. NCC Publications 1976.


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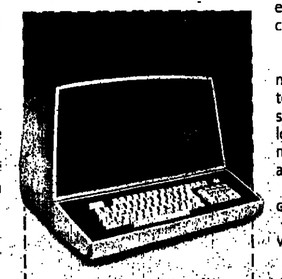
Over the last five years worldwide sales and profits of ComputerAutomation have increased more than sixfold, building on an already sound financial base.

**Delivery**

You'll get a SyFA System installed and working within 45 days (yes, days) from the date of order.

**Reliability. Now and in the future.**

The SyFA System is based on ComputerAutomation's own Naked Mini,® the Megabyter. With the computing power to support up to 24 independent terminals, and perform 43 tasks concurrently.



150 Naked Mini computers are shipped, on programmed delivery, to OEM customers throughout the world each week. That's a measure of reliability.

Our customers invest their future in ours. Which is why we in turn invest so heavily in engineering, development, and customer support.

**The Market**

If you already have a mainframe but are being pressed to provide distributed network systems for your users, or you are looking at free-standing interactive minis, we have both the product and company you need.

Which is why SyFA's competitors don't frighten us.

SyFA. Computing power where it's needed.

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☐ Please send me a full list of your competitors.
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☐ Please arrange to give me a demonstration of SyFA.

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Company:
Tel. No:
Address:

CW 8/12

ComputerAutomation

Commercial Systems Division, CAI Limited (ComputerAutomation)
European Headquarters: Hertford House, Denham Way, Rickmansworth WD3 2XQ Hertfordshire, England. Telephone: Rickmansworth (09237) 71511

# Programmers 'becoming like factory workers'

PROGRAMMERS and operators are becoming little more than factory production line workers with the resultant loss of skills and job satisfaction, said Ian Benson, computer industry organiser at TASS, the white collar section of the engineering union. He was speaking at the eighth joint meeting of the British and Irish Computer Societies in Newcastle, County Down.

Benson said the programmer team idea and increasingly sophisticated operating systems had damaged skill levels of programmers and operators, and had led to an average salary in computing which was lower than that received by other groups of white collar workers.

He said there was a pressing need to recruit people in computer services companies into the union because computing people in the other areas of the industry, especially those in the public sector, were being adversely affected.

Benson also believed that unions should monitor closely the growing influence of computers.

One BCS representative at the conference was the chairman, Professor Paul Samet, who presented the award for the best branch public relations officer to Denis O'Sullivan of Belfast branch.

# Police lab speeds blood tests

A PROTOTYPE bar code reader from Vickers is being used by the Metropolitan Police Forensic Laboratory, London, to help identify more quickly motorists' blood samples submitted for analysis.

Using a light-pen to read bar code labels, each sample can be identified as it undergoes gas chromatograph testing.

Information collected via the bar coded labels and by chemical analysis is then entered into the lab's PDP-11 for processing and eventual print-out for presentation as evidence in court.

Evaluation of the Vickers system should be completed early next year when a decision will be made on whether to order more terminals.

# Software house opts for B80

THE Sheffield software house Slinn Systems has installed one of the first Burroughs B80 systems outside the banking sector in the UK. Costing £18,500, it has a 60K byte CPU and five Mbyte cartridge disc. It will be dedicated to the development of B80 packages for the world market.

Nigel Laurie (right) gets down to the business of communicating with his audience of DP managers on the importance of communications. In the chair (left) is Neville Taylor, who is also chairman of the DPMA.

# Crisis facing DP management

THE DP department can face up to the crucial challenges of the next few years only if it can improve communications with user departments to create an environment in which computers will be viewed positively and realistically.

Speaking last week at a lively workshop on DP/user communications, Nigel Laurie, of Communications Audit, pointed out that DP management was faced with an imminent crisis, the result of which could either be that the DP department loses control of information in an anarchic world of local user power, or else DP departments will increase in status as central co-ordinators of a company's information management.

"In a sense, it is always crisis time for the DP department. But there are factors that make this time in computer development particularly critical," said Laurie.

Two of the key factors in the changing computer world, he pointed out, were the convergence of computer and communications technologies and the increased use of microprocessors, creating the "small is beautiful" notion.

He pointed out that there are people like Fred Lamond, who say that micros will spearhead a revolution similar to the way in which the printing press increased the spread of knowledge on a mass basis.

"The key thing about the printing press, however, was that it enabled empires and corporations to be built because it provided the means for large scale integrated information systems," Laurie said.

If micros grow in an uncoordinated way, however, they would be a threat to such information systems because they could lead to anarchy, with user departments developing information systems based solely on their own local need."

As one user at the workshop pointed out, however, user departments interested in micros could view the DP department as a source for advice and assistance.

The workshop, organised by Computer Weekly and the Data Processing Management Association, examined some of the techniques which could be used in improving communications. These were outlined in a series of five articles by Nigel Laurie (starting in CW, October 20). The results of a survey of DP/user communications and other aspects of the workshop will be examined in Computer Weekly shortly.

# Labour names IBM in call for strict watch on multinationals

THE Labour Party has called for stricter monitoring and control of multinational companies in a policy document* which in several places holds up IBM and ITT as examples. The document has come at a time when a statement on multinationals is expected from the National Economic Development Council's working party on the computer industry.

Labour's document says the UK must monitor multinationals' policies towards employment, exports, research and development; find out their importance in major sectors of industry and ensure that they do not achieve a dominant position without consideration of the effects; ensure that the control of the companies is not left in the hands of speculators but that UK jobs are safeguarded; and guard against multinationals pulling out of the UK through decisions taken in another country.

The Labour Party does not accept that the government is helpless against multinationals and therefore ought to do nothing to antagonise them. The policy document says, "If they wish to invest here it is only correct that it is on terms and conditions laid down by the British government."

The document suggests that the government could put pressure on multinationals in the form of strict conditions on existing financial aid and firmer control of public sector purchasing, prices and merger bids. It also calls for new legislation which would enable the government to demand more information from multinationals.

ITT's policy towards unions is quoted as typical by the Labour document. There is in the company "positive resistance by management to any union moves to extend relationships, on a group basis, to include consultation and collective bargaining."

The document adds that the multinationals' ability to put local conflicts into an international context by threatening to switch investment to another country is a major shift in the flexibility of bargaining.

*International Big Business; Labour's Policy on the Multinationals. 134pp. 90p. The Labour Party, Transport House, Smith Square, London SW1p 3JA.

# AT&T in anti-trust suit

AN ANTI-TRUST suit even more copious and protracted than that against IBM is likely to get under way in the US next year, following a ruling last week in the Supreme Court. Defendant will be AT&T, the US telephone company, and the Justice Department will be seeking a ruling that AT&T should divest itself of its Western Electric manufacturing subsidiary and its long lines division which handles interstate telephone calls.

The Supreme Court rejected an AT&T petition which claimed that as it is closely regulated by the Federal Communications Commission already, it is not subject to anti-trust laws.

The last major anti-trust dissection of AT&T was in the 1920s, when the company's international operations were split away and formed ITT.


MINI MICRO '78

## Invitation

You are cordially invited to visit MINI/MICRO '78, a major exhibition of computers and peripheral equipment at the United States Trade Center, Langham Place, London W1 on any day from January 16 through 20, 1978. (12.30 – 5.30 pm Monday, January 16, thereafter 9.30 am – 5.30 pm through Friday, January 20.)

The exhibition will bring together the products of some 60 leading US firms to form a display which will cover the latest developments in the field.

Many exhibitors will be new to the UK marketplace and will be seeking representatives to handle sales of their products and services in Britain and other parts of the world.

US companies already established in this country will also be using the show to introduce new product developments. Fully qualified representatives from the American firms or their British representatives will be manning their stands throughout the length of the show.

### PROVISIONAL LISTING OF EXHIBITORS AND THEIR PRODUCTS

**ABLE COMPUTER TECHNOLOGY**
[illegible]

**APPLIED DIGITAL DATA SYSTEMS INC**
[illegible]

**ASTROCOM CORPORATION**
[illegible]

**ASTRO COMPUTER COMPANY**
[illegible]

**DATAPRODUCTS CORPORATION**
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**TEKTRONIX INC**
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**TELEFILE COMPUTER PRODUCTS INC**
[illegible]

**TRANS DATACORP**
[illegible]

**WESTERN PERIPHERALS INC**
[illegible]

### MINI/MICRO COMPUTERS & PERIPHERALS SEMINAR

**Tuesday, January 17, 1978**

Concurrent with this exhibition, the United States Trade Center is sponsoring a full day technical conference on the latest advances in Mini and Micro Computers and Peripherals. The seminar will be held on Tuesday, January 17, at the American Embassy, Grosvenor Square, London W1.

The conference programme has been planned and arranged in consultation with an advisory committee drawn from research, manufacturers and users of mini/micro computers both here and in the United States.

The seminar will explore the roles of both mini and micro computers and their interrelationships. Authoritative speakers will present papers addressing such subjects as applications, software, development systems, peripherals and interfaces. Presentations will be followed by open discussion periods in which delegates will benefit from the crossflow of information and exchange of ideas and techniques.

Please send me more information about Mini/Micro '78
Name..........
Title..........
Organisation..........
Address..........

THE UNITED STATES TRADE CENTER. 16-20 JANUARY. LANGHAM PLACE, LONDON W1.
AN EXHIBITION OF COMPUTERS AND PERIPHERALS


# Appointments


## Analyst/Programmers up to £6,300
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Our commercial systems are handled on two IBM mainframes, with a variety of mini computers handling business and process control systems.

It's an environment that gives you the variety and challenge of interactive program development, close contact with systems users, and the opportunity to make a real, individual contribution to overall systems design.

To join us, you need at least 12 months experience in commercial programming – 18 months if you're aiming to join us as a Senior Programmer.

With our technical training and all the knowledge and skills you will gain working with MGS, you can expect to progress quickly to Team Leader or Analyst/Programmer.

You'd join us on a salary scale ranging from £3450 to £6300. We'd also pay you overtime, and give you benefits like four weeks' holiday, free life assurance, free pension scheme and sickness scheme and assistance with relocation where appropriate.

If you're interested in making the most of your commercial programming experience, please 'phone or write for an application form to Jane Jones, Mars Group Services Limited, 132/133 Fairlie Road, Slough, Berks. Slough 30721.

MARS GROUP SERVICES
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### SALES ENGINEER

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or call 0734 50181

## University of London Computer Centre

### Network Supervisor

The University of London Computer Centre is a regional computer centre which provides a computing service to London, South Eastern and South Western Universities on Control Data 7600, 6600, 6400 and Cyber 72 computers. The Centre supports a communications network of more than 50 remote batch terminals and 30 asynchronous lines.

Applications are invited for the post of Network Supervisor. The person appointed will supervise a small team engaged in diagnosing hardware problems, co-ordinating engineering support, installing new data communications equipment and generally making an effective contribution to the running of the Centre. Experience of similar work would be a definite advantage but an operational or engineering background with a data communications emphasis would also be suitable.

Starting salary will depend on experience and will be on a scale up to £6627 (under review) + £450 London Allowance.

Leave entitlement is 6 weeks per annum.

Further details and application forms are available by phoning Linda Rowlands on 01-405 8400, ext. 249, or by writing to Operations Secretary, ULCC, 20 Guilford Street, London WC1.

## OLD LANGUAGE, NEW TRICKS

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Our current requirements include:

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| LONDON AND N.E. ENGLAND | IBM OS PL/1 |
| BUCKS | IBM SYSTEMS PROG. BTAM & TCAM |
| CROYDON | IBM DOS COBOL |
| N.E. ENGLAND | IBM VM/CMS COBOL |
| LONDON | PROJECT MANAGER |

**BURROUGHS**

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| SURREY | COBOL |

**ICL**

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| LONDON | ICL SYSTEMS/ANALYST |
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If all you're interested in is the next contract and the next pay cheque, calling Knights will be a waste of time. But if you want to put some sort of shape into your experience, to start building a career for yourself, we're the people to talk to.

We'll look at what you've done over the last 2½ years or more, and put a value on it. We'll listen while you tell us what you want to do next, and if you aren't too sure we'll make some suggestions. We'll find out what sort of person you are, and fit you into an environment where you'll be at your best.

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### IBM OPS

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The money's up to £3000 plus 25% shift allowance, reviewed after six months. The banking benefits are worth even more cash in your hand. Prospects to move into programming after a year or two. Seriously, this could be one of the best you'll see for some time. Ref. AM/0076 **London**

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**£2800 plus shift allowance in cheap-housing Lancashire**

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Department of Computer Science

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This post is for a three year period and the starting salary will be in the range £3,333-£3,761 p.a. (under review) with a contribution of 6¼% to the USS pension scheme.

Four copies of applications, together with a curriculum vitae containing the names of three referees, should be sent by Friday, 6 January, 1978 to the Registrar, University of York, Heslington, York, YO1 5DD, from whom further particulars may be obtained. Please quote reference 12/7070

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# University of London Computer Centre

## Systems Programmers

(For Telecommunications and Quality Assurance)

## Graphics Applications Programmer

The University of London Computer Centre is a regional computer centre which provides computing service to London, South Eastern and South Western Universities on Control Data 7600, 6600, 6400 and Cyber 72 computers.

The Centre supports more than 50 remote batch terminals and is part of the University of London network: METRONET. Graphic facilities presently include CalComp 1670 Microfilm Recorder (16mm and 35mm) and 2100 Microfilm system, with in-house film processing.

Applications are invited for the following posts:

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Two Programmer/Analysts are required to join a team engaged in the design, improvement and maintenance of telecommunications systems on mainframe and minicomputers. The development programme includes providing support for new protocols, higher line speeds and enhancements to METRONET. Applicants should have sound experience of assembly language programming and experience with telecommunications software would be an advantage.

**Quality Assurance Post (Ref QA1)**
One Programmmer/Analyst is required to join the Quality Assurance Unit which is responsible for the integration and testing of the software and for monitoring the quality of service. Applicants should have at least one years experience in systems programming

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One Programmer/Analyst to assist with the maintenance and provision of graphics software. The applicant should have an interest in all aspects of computer graphics — both batch and interactive — and the ability to develop original ideas. A sound knowledge of Fortran is required, while relevant experience would be an advantage.

Salaries for the posts above will be at appropriate points on the following academically related scales, which are under review.

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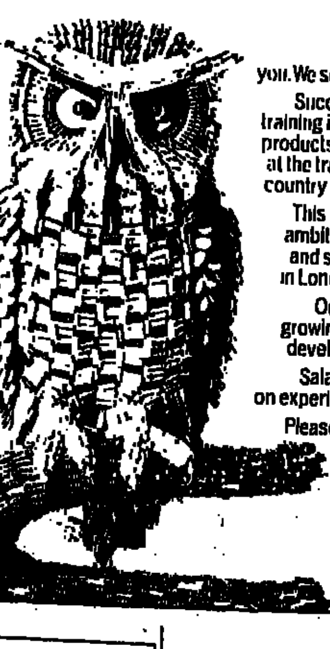

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Our client regards this appointment as fundamental to the future development of computer systems within their company. A departmental reorganisation has created a position which will offer the successful candidate a particularly exciting career opportunity, both in the short AND long term. We want to meet a real Systems and Programming 'professional' who is now looking for an opportunity to apply that professionalism to a growing and successful Data Processing environment.

Your first task will be to take over the Systems and Programming group and ensure that it continues to operate successfully. You will then be expected to liaise with more senior management to develop a strategy both in terms of hardware planning and applications development.

Your past experience will indicate significant systems knowledge and you will be able to prove 'a job well done' in your current employment. Your applications background will ideally be in financial and manufacturing systems, although applicants with other backgrounds will certainly be considered should they appear to have the right level of seniority. You will also be able to control people in both a systems and a programming environment. Your technical background will enable you to discuss sensibly and competently, technical problems with programming staff, but your recent involvement will have been in planning how management needs can be assisted by computer resources.

As a person, you will be sharp minded, able to talk at a senior level with confidence, good at communications both verbally and written, and will show considerable dynamism in your people management skills. You will enjoy hard work and be able to communicate this to your subordinates, and will have matured to the point where your interests are as much involved with business as computer systems.

We would like to receive applications for this position as soon as possible. We therefore invite you to forward a comprehensive curriculum vitae to the address below, or alternatively, telephone John Goldsmith at his home on Sunday, 11th December between 8.00 p.m. and 9.30 p.m. Telephone No: Camberley 21266. Ref. 1103.

Computing Services Association

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### A NEW YEAR A NEW CAREER IN SOUTH WALES AND THE WEST COUNTRY

Major National and International companies in South Wales and the West are seeking good experienced analysis and programming professionals to join their expanding D.P. Departments.

Analysts are required with specialist experience in the field of finance and insurance or with a more general commercial background. Salaries offered range from £4,500 to £6,500 p.a. depending upon position and experience.

Programmers should have 2 to 3 years' experience, preferably of using Cobol on ICL or IBM mainframes. Again salaries depend upon position and experience, but range from £3,500 to £5,500 p.a.

All positions carry the usual large company benefits and in certain cases successful applicants may qualify for relocation expenses.

Now is a fine time to think about a New Year move, so for further details contact **ATA Computer Recruitment, Equity & Law House, 36/38 Baldwin Street, Bristol—(0272) 211035.**

## AREA SALES MANAGER

### ON QUOTA c£11,000 + CAR EAST SCOTLAND

Our client won't guarantee you a successful New Year, but 50% of their existing salesforce will be enjoying an expenses paid fortnight in the States after making 125% of Quota in 1977.

You will be selling advanced business computer systems, inc. the market leader in Key to Disk data capture equipment and management information systems using powerful database techniques, in the Borders, East Central and North East of Scotland.

Applicants should ideally have a successful sales record in mainframe/mini-computers or related fields. Remuneration is by way of basic salary plus commission, a 2 litre car + normal large company benefits.

For an immediate interview telephone 031-226 5381 or write to: **ATA Computer Recruitment, Anglia House, 3rd Floor, 24-26 Frederick Street, Edinburgh.**

LONDON (01) 637 0781 — 230 Gt. Portland St., W1N 5HG
MANCHESTER (061) 832 5888 — 86 Cross St., M2 4LA
BIRMINGHAM (021) 643 1994 — Woolworth Building, 102 New St., B2 4HQ
BRISTOL (0272) 211035 — Equity and Law Building, 36/38 Baldwin St., BS1 1NR
EDINBURGH (031) 226 5381 — Anglia House, 24/26 Frederick St., EH2 2JR
CRAWLEY (0293) 514071 — 36 The Broadway

## occ computer personnel limited

# Technical Support Manager

**Reading** **c£7,200**

Our client, who provides Facilities Management services, also runs their own in-house computers. This installation comprises two 2970's and two 1903 A's with plans to install a large 2904 and 1904S. There is also a large communications network. A vacancy exists for a Technical Support Manager to plan and control all operations software and communications support.

The Technical Support Manager will have direct responsibility for ten support staff who are involved with the planning implementation and maintenance of VME/B, GEORGE II and III. Duties include the control of a communications network, providing a technical advice service; ensuring that projects are undertaken with a high standard of technical competence and that the operating systems and hardware are tuned and sized to provide optimum throughput of systems.

This vacancy requires both management and technical skills. Applicants should have at least four years experience of system support. An ability to maintain a professional attitude whilst working under constant pressure is essential, since customers rely on a stable, optimised operating environment to meet their strict schedules.

This is an ideal career-development step for someone who wishes to move into Project Management or has systems experience and wants to progress into a Technical Management role. The job is very demanding but gives tremendous job satisfaction whilst offering substantial rewards. **Ref: 106/CW**

***To apply for any of the above positions or for further information, please telephone or write to Renée Nute or Sandy Lloyd on 01-242 9366. If it would be more convenient to telephone in the evening, the telephone numbers are: Renée Nute, 01-874 6372, Sandy Lloyd, 01-691 5168.***

Computing Services Association

## Banking Systems - Sales Consultants

Hoskyns is one of the largest and most successful computer services companies, providing a complete range of services on a worldwide basis

Our specialised banking division has a high reputation for the quality of its services resulting from over ten years of involvement with a wide variety of banking clients. The services and products that we provide include

- a standard international banking system handling retail and wholesale applications on an international basis
- turnkey systems based upon a variety of manufacturers' equipment
- banking and technical consultancy.
- systems and programming resources.

**We are now significantly expanding our activities in the banking sector and we are therefore looking for additional professionals to join our banking sales team. Such people will be dedicated to the marketing of our services to a wide variety of banks in the U.K. and overseas. They might also become directly involved in providing consultancy and implementation support to our banking clients.**

Suitable candidates will probably be between 25-40 and will have:

- a strong DP background
- a good understanding of retail and wholesale banking applications – this may have been gained from working in a bank or from selling or implementing systems solutions.
- initiative, enthusiasm and the ability to communicate at all levels

The rewards are significant and the remuneration package offered will be highly attractive to candidates who can demonstrate their ability to make a significant contribution to our activities. Hoskyns is a professional company with a high growth offering a wealth of career development opportunities to its executives

If you are interested then please send me your career details or call me direct:
**DICK WILLOTT, JOHN HOSKYNS & COMPANY LIMITED,
91-93 FARRINGDON ROAD, LONDON EC1M 3LB.
01-242 1951.**

**hoskyns**

A systems company with over 500 professionals, 12 computer centres and 13 years of continuous growth.

**CUNNINGHAME DISTRICT COUNCIL**
**Finance Department**

## SYSTEMS ANALYST/ PROGRAMMER

**Post Ref. 02/66A**

**Salary AP IV £4,477-£4,915 (inclusive of salary supplements)**

The District Council have recently acquired a disc based N.C.R. 8250 Computer, programmed in COBOL, running under an interactive multi-programming operating system.

Applicants should ideally have experience of local government procedures and a sound computing background

The successful applicant will be responsible for maintenance of existing programmes, liaison with N.C.R. in the installation of package programmes and development of new systems.

Free group life assurance scheme is in operation. Housing may be available to suitable applicant.

Applications stating age and experience and with details of two referees should be forwarded to Director of Finance and Establishment Officer, from whom further particulars may be obtained, not later than 26th December, 1977.

Post reference number should appear on all applications, which should be addressed to Cunninghame House, Irvine KA12 8EE, Ayshire.

**DATA SCIENCES INTERNATIONAL LIMITED**

## COMPUTER OPERATORS

Data Sciences International Ltd. are seeking additional staff with at least 12 months' experience of ICL 1900 equipment. Our ICL 1904A is being substantially upgraded in January 1978 and is operating on a 3 shift system. Substantial overtime earnings can be achieved, which together with a salary reflecting the market rate, makes a most attractive opportunity to join one of the leading Computer Bureaux.

Some assistance may be given with relocation expenses.

Applications in writing or by telephone should be made to:

**Mrs. D. Jolley
DATA SCIENCES INTERNATIONAL LTD.
Crossford Court, Dane Road, Sale, Cheshire M33 1BZ
Tel: 061-962 7224**

**COMPUTER CENTRES also at
Leeds — 0532 41841
Birmingham — 021-742 3241**

# Come along for an informal chat about bringing your computer skills to a major new installation.

## Anglian Water Authority

Our client, a public body, is located in a most attractive part of East Anglia within easy reach of London and the Midlands. At the moment, it is in the process of installing one of the largest and most significant DP operations in the country, utilising two Honeywell 66/10 computers with extensive use of data base and telecommunications techniques including 100+ remote terminals.

Our client requires:

**PROJECT LEADER TO £6,830**
Experienced chief programmer of graduate calibre with minimum five years' experience COBOL, FORTRAN and ASSEMBLER language. NJC Grade 9. Ref. No. 106/JP/CW.

**SYSTEMS ANALYST TO £5,537**
Strong computing background and experience of financial systems in a large installation including on-line applications and data base concepts and experience of design and analysis. NJC Grade 7. Ref. No. 107/JP/CW.

**SENIOR SOFTWARE DESIGNER TO £5,537**
Graduate with 3+ years programming experience including use of COBOL and knowledge of tele-processing including VDU's etc. NJC Grade 7. Ref. No. 108/JP/CW.

**PROGRAMMING TEAM LEADER TO £5,000**
University degree/relevant business qualifications, 3+ years programming experience with COBOL, teleprocessing and knowledge of data base with experience of leading a team. NJC Grade 6. Ref. No. 109/JP/CW.

**SENIOR PROGRAMMER TO £4,517**
3+ years experience with COBOL and interactive programme development, modular/structured programming techniques. NJC Grade 5. Ref. No. 110/JP/CW.

**PROGRAMMERS TO £4,073**
2+ years programming experience using COBOL and modular programming/testing techniques. NJC Grade 4. Ref. No. 111/JP/CW.

**JUNIOR PROGRAMMERS/TRAINEES TO £3,210**
Minimum one years' experience including COBOL **or** an ideal opportunity for an HND – 'A' level calibre man or woman to build a career in the computer sciences. NJC Grade 2. Ref. No. 112/JP/CW.

These are career positions which will appeal to computer professionals anxious to develop their skills in a progressive environment. Our client offers truly generous relocation and re-settlement benefits in a low cost housing area.

If any of these opportunities are of interest, you are invited to come for an informal talk to consultants advising the Anglian Water Board on these appointments, to the following locations.

**LONDON**
Moxon Dolphin & Kerby Ltd.,
60 St. Martins Lane, London WC2.
Wednesday, 7th December 1977
3:00pm to 8:00pm

**NEWCASTLE**
Swallow Hotel, Newgate Street,
Newcastle Upon Tyne.
Saturday, 10th December 1977
10:00am to 3:00pm

**LIVERPOOL**
Holiday Inn,
Paradise Street, Liverpool.
Monday, 12th December 1977
3:00pm to 8:00pm

**MANCHESTER**
Post House Hotel, Palatine Rd.,
Northenden, Manchester 22.
Tuesday, 13th December 1977
3:00pm to 8:00pm

**LEEDS**
The Dragonara Hotel,
Neville Street, Leeds.
Friday, 9th December 1977
3:00pm to 8:00pm

**HULL**
Centre Hotel,
Paragon Street, Hull.
Saturday, 10th December 1977
10:00am to 3:00pm

**BIRMINGHAM**
Holiday Inn, ATV Centre,
Holliday Street, Birmingham.
Monday, 12th December 1977
3:00pm to 8:00pm

If these dates are inconvenient, write or better still telephone for an application form to Jeffrey Parmenter, quoting the appropriate reference number at:
Moxon Dolphin & Kerby Limited,
60 St. Martins Lane, London WC2N 4JP.
Telephone 01-836 1500.

MOXON DOLPHIN & KERBY LTD.
MANAGEMENT SELECTION



# GO WEST, YOUNG MAN!

**C.E.G.B. is about to embark on a significant expansion programme, this includes moving the Headquarters to a modern, purpose-built centre, at Bedminster Down, on the Southern outskirts of Bristol, and taking delivery of a further machine. Currently the installation is centred around an ICL 1903T processor, utilising COMMUNICATIONS MANAGER for real-time development.**

**A three-year systems development plan has isolated a series of interesting and varied projects far advanced in concept and in preparation for the 1980s.**

**For those who demand a stimulating environment and a challenging career progression:**

**CONTACT ANDY CARTER on 021-238 3781, reversing the charges if necessary. EVENINGS Lapworth 3272.**

Can you relate your academic qualifications and experience to the specific requirements of our client?

## Systems Adviser —

**SALARY RANGE £6,500-£6,950 (to £7,550)**

- ★ substantial in-depth knowledge of commercial systems
- ★ minimum of five years' systems involvement
- ★ Good communicative ability
- ★ the desire to move into a planning co-ordination role

## Senior Systems Analyst —

**SALARY RANGE £5,500-£6,950 (to £7,550)**

- ★ a minimum of five years' systems experience, some of which must have been spent in a supervisory capacity
- ★ implemented at least one major system
- ★ communicate effectively with all levels of management

## Systems Analyst —

**SALARY RANGE £4,900-£6,400**

- ★ a minimum of three years' systems experience
- ★ preferably a programming background within a commercial installation

## Junior Analyst —

**SALARY RANGE £3,525-£4,775**

- ★ an understanding of systems work in a commercial environment
- ★ a genuine desire to move into a formal systems role

## Senior Programmers —

**SALARY RANGE £4,775-£6,225**

- ★ in-depth programming experience, preferably COBOL
- ★ thorough knowledge of 1900 series equipment
- ★ previous supervisory or design experience an advantage

## Programmers —

**SALARY RANGE £3,525-£4,775**

- ★ a minimum of 12 months' COBOL experience, preferably gained in an ICL environment
- ★ the desire to work in a small town environment

## Software Programmers —

**SALARY RANGE £4,775-£6,225 or £6,625-£6,775 (to £7,375)**

- ★ a minimum of three years' software programming experience preferably within an ICL installation
- ★ a knowledge of data communication procedures
- ★ a thorough understanding of GEORGE III
- ★ a higher salary range applicable to Team Leader

## User Liaison Officer —

**SALARY RANGE £4,775-£6,225**

- ★ in-depth operations experience of job control and data processing methods at a supervisory level
- ★ be self-motivating and prepared to work with a minimum of supervision
- ★ experience of key-to-disc systems an advantage

SRC is retained by C.E.G.B., specifically to recruit for the above positions. All applicants should apply directly to SRC who are conducting the initial interviews.

**SPECIALIST COMPUTER RECRUITMENT LTD.**
**BIRMINGHAM 021-236 3781 FREEPOST**
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
**MANCHESTER 061-833 0676 FREEPOST**
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 3BD
**LONDON 01-935 0671 FREEPOST 6**
Freepost 6, 102 Blandford Street, London W1E 1JZ

Central Electricity Generating Board

SCR

JBA

# HOLLAND

**Technical Authors package £10,000 (min)**

Our Client in Holland, requires Authors to produce user and in-house documentation for reference and guidance purposes on commercial mini-computer d.c. networks. Candidates do not necessarily need a detailed knowledge of d.c. but must be able to demonstrate writing ability and technical flair. User aware programmers or analysts, who enjoy documentation and technical communication, will be considered seriously.

Vacancies also exist for writers in other technical areas (H/W or S/W) and we would be pleased to hear from people interested in working abroad.

*Excellent salary and benefits, pleasant location.*

Contact Jim Baker

# PARIS

**Analyst Programmer up to £9000**

Our Client, a large International Trading, Shipping and Financial Organisation, has an immediate opportunity for an experienced Analyst Programmer to join a small development team in Paris.

Applicants, who must either speak French or be prepared to learn, should have at least two years experience in the design and implementation of finance and accounting applications on minicomputers, preferably HP3000 but a PDP11 or NOVA background would be acceptable.

It is essential that candidates have used FORTRAN or COBOL in a database/real-time environment.

*Permanent positions. Salary negotiable with generous fringe benefits and ideal working conditions in the centre of Paris.*

Contact Jim Baker

# WEST AFRICA

**Systems Analyst c.£10,000 + benefits**

Our Client, a Consultancy Organisation, requires an Analyst for a one year project in Sierra Leone, commencing early in January. Candidates will be very systems minded, have a strong O & M background, and, ideally, experience in a manufacturing environment. Position would suit, perhaps, an ex-O & M person with good analytical abilities. Single status preferred.

*Benefits include car and house provided.*

Contact Mike Creamer

## Data Base Consultants

**London Based £6000–£10,000**

One of the U.K.'s most respected software houses, well known for its database work, wishes to recruit additional database specialists.

They will be required to work on a variety of client projects which could range from advising on the feasibility and implications of adopting the database approach to leading an implementation project. A wide computer and applications background together with experience of special analysis and design methods appropriate to database are more important than detailed software knowledge. One of the positions requires detailed knowledge of the oil industry.

Contact Margaret Stevens

## Minicomputer Programmers

**West of London c.£5000 +**

A small but dynamic software organisation has vacancies for Programmers to work on a number of sophisticated development projects.

Applicants should have at least one year's experience of a high level language such as FORTRAN, CORAL or BASIC on PDP11's, NOVA or H.P. Knowledge of an assembler would be an advantage.

*Salary negotiable according to experience.*

Contact Jim Baker

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01–491 4478

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# We need people to:

- program mainframe computers, including IBM, BURROUGHS and HONEYWELL
- design and program mini-computer systems
- conduct consultancy assignments, including hardware evaluation and turnkey installation

# If you have:

- experience in one or more of the above areas
- a mature approach to your work
- the desire to earn £4500 - £10000 p.a. with excellent fringe benefits and prospects

# Then:

- write to or telephone

Shelagh Felgate,
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Westway House,
320 Ruislip Road East,
Greenford,
UB6 9BW.
Tel: 01-578 4563

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# ata Computer Recruitment

## SYSTEMS ANALYSTS

## To £6,250

As a large, well established international company, our client enjoys high profitability, diverse product manufacture and recognised market leadership. Their D.P. facility is based on the Kent/S.E. London border. Committed as they are to a major hardware expansion inhouse and throughout fifteen U.K. locations their main facility now requires three Senior Analysts and one Systems Analyst. The current D.P. structure comprises three project teams. Involvement will primarily be on implementation of a management information system and a materials control programme. However, other diverse functions mark these positions as highly demanding and stimulating.

Ideally applicants will have 3-5 years' mainframe experience which will enable them to capitalise upon the very real career opportunities available. Remuneration is to the following levels: Senior Analysts to £6,250; Systems Analyst to £5,500. Equally all the usual large company benefits apply.

For an immediate and confidential interview please contact either our London or Crawley offices on 01-637 0781 or (0293) 514071.

**ATA COMPUTER RECRUITMENT**
**230 Great Portland Street, London W1N 5HG**
**36 The Broadway, Crawley, Sussex**

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MID SUSSEX District Council

## Senior Systems Analyst

**£4,343-£5,065 p.a.**

Team leader in local government. O & M and computer studies in financial, planning, housing and engineering fields. Remote terminal to IBM 370/158.

Vacancy also for analyst wishing to develop towards corporate planning, project appraisal and review. £3,397-£4,215.

Application form: Personnel Department, [illegible] Road, Haywards Heath, Sussex, RH16 1LG. Tel. 412572 ext. 69. Quote Ref. 98

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# "Why I think you should join the CMC salesforce"

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★ You have sold main-frame
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★ You're a successful salesman in the field with a proven record
★ Earnings of £15,000 p.a. attract you

Interested? Then ring Jerry Causley on Hemel Hempstead (0442) 61266 and talk about joining the fastest growing Company in the business.

*And if you want this sort of salary but are without the experience, yet feel you can become a top EDP professional, then still get in touch.*

CMC Data Preparation
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Head Office and Manufacturing
Maxted Close, Hemel Hempstead, Herts HP2 7LA
Telephone 0442 61266.

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MYRIAD OPERATIONS
Computer Personnel Consultants

## LOOK AHEAD

**MIDDLESEX OPERATORS To £4300**

A substantial commitment to computerised data processing is a reflection of the success of this multi-national manufacturing and marketing organisation. Two additional SENIOR COMPUTER OPERATORS are now required to join this progressive team, and play an active part in ensuring the efficient use of the installation's sophisticated systems.

Applicants with at least eighteen months' experience on medium or large byte processor systems (IBM, Burroughs, etc.) will, if successful, be given the opportunity to extend their experience and ability beyond the normal limits of operating.

First-class remuneration is offered in the form of a basic salary plus shift allowance, and a comprehensive range of fringe benefits.

Candidates keen to further their career will find enthusiasm and integrity well rewarded in an installation where potential is realised.

Please telephone for a confidential discussion or write:
30 Fleet Street London EC4Y IAA
01-353 5868

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## D.P. MANAGER

**NORTH CHESHIRE C £5K neg.**

We are retained by our clients, Davidson & Metcalfe Ltd., to recruit a Professional Manager for their DP function. The client is a Public Company employing 300 people at this location and running a Burroughs B700 mini computer.

The applications currently running are the general accounting functions and the next one to go live will be part of the production control function.

The person appointed will be:

★ Able to negotiate with users at all levels.
★ Able to manage and motivate staff.
★ Able to design and write small programs in RPG II.
★ Solution orientated.
★ Able to expand with the job.

Assistance will be given with relocation

CONTACT: Chris Courtney-Stones 0422-58231
QRH Computer Recruitment
Halifax (0422) 58231
Queens Road Mills, Halifax

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# Recruitment Consultant £4-6k + profit sharing

We are ideally seeking someone with a successful record in contract or permanent computer recruitment. Some who enjoys the challenge of selling, negotiating and servicing the business he or she generates.

However, if you lack the recruitment experience but feel your selling abilities combined with your past computing experience wouod assure your success in this field ring us today.

The successful applicant can expect an excellent career opportunity with management prospects where remuneration is paid on ability by way of basic salary and profit sharing.

All applications will be treated in the strictest confidence. If you require any further information and/or confidential discussion on the above telephone us, quoting Reference A1.

01-439-3671 HEXAGON computer services
5th FLOOR SUITE 145 WARDOUR STREET LONDON W1V 3TB

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## WHY NOT JOIN BRITAIN'S FASTEST GROWING MICRO-COMPUTER TEAM

**TIPS TERMINAL SYSTEMS**

need top flight
**PROGRAMMERS**
and are willing to train the right people

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up to £6,500

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## SENIOR PROGRAMMER

**The Company:** Ibex Computer Services — an independent service bureau.
**Location:** Moderh offices situated close to tube and BR stations in North London.
**The Job:** Senior programmer responsible for the complete development of defined systems covering a wide range of applications for our clients.
**The Machine:** NCR Century 75, card, PPT and cassette input, 7200 terminals.
**Experience:** A sound experience in NEAT/3 and Century operating systems is essential.
**Opportunities:** Progression to systems design.
**Salary:** Negotiable
**How to apply:** Write for an application form giving brief details to:

**Systems Development Manager**
**IBEX COMPUTER SERVICES LTD,**
**Euro House, 1394 High Road, Whetstone, London N20 9LS**

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HAWKER SIDDELEY

**PETTERS LIMITED**

## SYSTEMS ANALYSTS

Petters are leading manufacturers of transport refrigeration units, marine and industrial diesel engines and generating equipment.

Our Data Processing Department presently runs an ICL 2903 with discs and tapes which will shortly be enhanced to 2904 with further disc storage and communications equipment.

The imminent implementation of new systems in Production Control, financial and commercial areas, and our Parts and Services Division has created vacancies for:

**SENIOR SYSTEMS ANALYST and 2 SYSTEMS ANALYSTS**

Candidates should have a minimum of 2 years' systems/programming experience and be capable of communicating with all levels of management. Relevant project leadership experience would be preferable for the senior post.

Competitive salaries will be offered and conditions of employment include pension, sickness and life assurance schemes.

Applicants, male or female, should apply to:

**The Personnel Manager**
**Petters Limited**
**Hamble Lane, Hamble,**
**Southampton [illegible]**
**Tel: Hamble 2061**

PETTERS

## Reed Executive

The Specialists in Executive and Management Selection

### P C B Layout

Yorkshire **c. £6,500 + car**

As one of the fastest growing and most technically and commercially successful mini-computer companies in Europe, our client is strengthening its own in-house services to the development and production departments. They seek a P C B Layout Specialist who will make them fully independent of outside resrouces for this facility. Suitable candidates must have a minimum of three years' experience of advanced P C B layout and prove themselves to be meticulous and tenacious whilst working to demanding time schedules. Salary and benefits will be negotiated to attract the calibre of person sought. There are excellent career prospects and a stimulating working environment.

*Telephone 0532-459181 (24-hour service) quoting ref. 3340/CW, Reed Executive Selection Limited, 24-26 Lands Lane, Leeds LS1 6LB.*

The above vacancy is open to both male and female candidates

London Birmingham Manchester Leeds

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## PROGRAMMERS
## £3,800-£7,500

**COBOL - RPG - PL/1 - ASSEMBLER - FORTRAN**

**Alperton — Brentford — Brighton — Croydon — City — Caterham — Crawley — Camberley — Ealing — Feltham — Guildford — Hayes — High Wycombe — Horsham — Kingston — London (SE) — Maidenhead — Reigate — Redhill — Ruislip — Richmond — Slough — Sutton — South Norwood — Sunbury — Uxbridge — West End — Wimbledon — Walton-on-Thames — Weybridge — Wembley.**

If you are seeking a position in any of the above locations, please phone for an application form.

**AMES PERSONNEL**
TELEPHONE: 01-767 0611

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**Saudi Arabia**
**Dhahran**
**University of Petroleum and Minerals**

The University is seeking experienced:

### 1. Systems Programmers

IBM 370 equipment, with 3-5 years' experience in MVS systems generation and maintenance, TSO, Performance Measuring and Monitoring.

### 2. Scientific Analysists

with good working knowledge of FORTRAN; and a background in one or more of the following: Statistical Packages; On-line or Off-line Graphics; CAI/CMI; TSO; Documentation.

### 3. Analysts/Programmers

with 3-5 years' experience in business systems preferably University Business Systems; and a strong COBOL background in IBM OS/VS environment

### 4. Data Processing Staff Trainer

with 3-5 years' experience in planning professional DP training programs; experience in instructing DP course in OS/VS environment.

Minimum regular contract for two years, renewable. Excellent salaries and allowances, free air-conditioned housing, free air transportation to and from Dhahran each two-year tour. Attractive educational assistance grants for school-age dependent children. Local transportation allowance in cash each month. Paid vacation each year

Apply with complete resumé on academic and professional background, list of references, and with copies of degrees, including personal data such as family status (wife's maiden name, names of children, age and sex), home and office addresses, telephone numbers, to:

**University of Petroleum and Minerals**
**c/o Miss E. Whitechurch**
**Gabbitas-Thring Services Ltd.**
**Broughton House, 6, 7 & 8 Sackville Street**
**Piccadilly, London W1X 2BR**

**Interviews will be held in January.**

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## COMPUTER WEEKLY

*presents a special one-day conference*

## Solving the computer staff problem

*The Cafe Royal, Regent Street, London*
*Thursday, January 19th, 1978*

Please reserve ..... place(s) at the "Solving the computer staff problem" conference to be held at the Cafe Royal, London W1, on Thursday, January 19th, 1978.

The fee is £55.00 plus 8% VAT (£4.40). Invoice will be sent.

Please send confirmation of booking to (CAPITALS please):

Mr/Mrs/Miss

Company

Address

Telephone

Please return coupon to:

**Conference Administrator**
**IPC Business & Industrial Training Ltd**
**Surrey House**
**Throwley Way**
**Sutton**
**Surrey, SM1 4QQ**
**Telephone 01-643 8040**

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**POLYSAR**

Polysar International SA is the Overseas Sales Organisation for a Canadian owned international Group engaged in the manufacture and sales of synthetic rubber, latices and plastics, established in Fribourg, Switzerland since 1962. We have an interesting opening in our EDP Department for an

### ANALYST/PROGRAMMER

Applicants should be graduates in Economics/Finance or associated disciplines who have proven experience in a commercial organisation. At least two years' EDP background with some exposure in the analysis field, ideally involving international operations, as well as strong programming ability with emphasis on COBOL and/or RPG-II are essential requirements for this position. Linguistical knowledge should include fluency in English and French.

The successful candidate will be entrusted with varied and interesting work assignments. A certain amount of his time will be spent outside Switzerland. We offer fair remuneration commensurate with qualification and performance, and social benefits expected from a progressive Company.

If you are interested in this opening please send your resumé to

**The Assistant Personnel Manager**
**Polysar International S.A.**
**10, Rte. de Beaumont**
**CH-1701 Fribourg/Switzerland**

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**Rediffusion at Aylesbury**

## Programming Manager

We have a large ICL installation — 1903A plus 1901T plus 32 key to disc stations, etc. — in a modern purpose-built computer block in the centre of the Chiltern Country. We need a Programming Manager to help plan a number of interesting future developments.

He, or she, will have a minimum of four years' actual experience, preferably including plan; he or she will be well able to apply project control techniques and be prepared to reinforce our existing programme standards.

An appropriate salary, with the usual fringe benefits, will be paid and if necessary help will be given with removal expenses.

Please write briefly to: R. H. Brazier, Data Processing Manager, Rediffusion Central Services Limited, PO Box 60, Rediffusion House, Gatehouse Road, Aylesbury, Bucks. HP19 3DU.

REDIFFUSION

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### MANCHESTER

## SENIOR SYSTEMS ANALYST

(with definite management opportunity)

**SALARY—£5-£6,000**

Due to our Clients' continuing success in the light manufacturing field, they now seek a Senior Systems Analyst with a minimum of 3 years' experience in a manufacturing environment. The successful applicant will take responsibility for leading a team of Systems Analysts developing manufacturing systems for a number of user sites throughout the North-West. Ideally, experience of CICS, combined with a knowledge of data-base is required for this position.

It is envisaged that the post of Systems Manager will be filled within the next 12 months, preferably by internal promotion.

Our Clients are located in a purpose-built Computer Centre close to the motorway network of South-East Lancashire, and assistance with re-location expenses is available.

Contact: TONY DEANE on: 061-833 0676

Ref: CW/12/5

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### NORTH MANCHESTER

## SYSTEMS PROGRAMMER

**SALARY — TO £5,500**

## APPLICATIONS PROGRAMMER

**SALARY — TO £4,250**

We have been retained to recruit the services of an experienced Systems Programmer who is ready to accept the responsibilities of being Senior Systems Programmer in a sophisticated and expanding data processing department. Currently, our Clients operate an IBM 370/138, under both DOS/VS and OS/VS1 and are heavily committed to on-line and data-base development, utilising "SHADOW", teleprocessing monitor and DL/1 for data-base software.

Ideally, candidates should be able to offer:

- ★ substantial COBOL and ASSEMBLER experience
- ★ a knowledge of DOS and/or OS, SHADOW, CICS, ENVIRON 1, or some other teleprocessing experience
- ★ an understanding of data-base techniques

Additionally, our Clients have a vacancy for an:

### APPLICATIONS PROGRAMMER

With this position, the requirement is for approximately 3 years' programming experience that has included practical use of both ASSEMBLER and COBOL.

Our Clients are a large engineering Company with major achievements in the export field and offer all the usual conditions of employment one expects from a Company of this stature.

Contact: TONY DEANE on: 061-833 0676

Ref: CW/12/7

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### WEST YORKSHIRE

## SYSTEMS AND PROGRAMMING OPPORTUNITIES

We are retained by our Client to recruit within their expanding Organization Systems Analysts and Programmers. Here is the opportunity to join a young DP Department in the prime of its development programme, offering excellent opportunities for career progression, and the chance to work in a real-time environment. The operation is based within a new purpose-built Computer Centre, housing a twin IBM 370 installation, utilising over 200 VDU's. The requirements are as follows:

### SYSTEMS ANALYSTS —SALARIES TO £5K

Candidates should have:

- ★ 2-3 years' experience in systems
- ★ a knowledge of commercial applications
- ★ preferably, but not essentially, a programming background

### PROGRAMMERS —SALARIES TO £5K

Candidates should have:

- ★ a minimum of 2 years' experience in a low-level language
- ★ a commercial background
- ★ experience of teleprocessing techniques is preferred, but not essential
- ★ a desire to work in a flexi-time environment

Our Client offers above average terms and conditions of employment with the added advantage of working in a locality easily accessible to the more beautiful parts of Yorkshire. A re-location package will be offered where applicable.

Interested!

Contact: SHEILA BRADBURY on: 061-833 0676

CW/12/6

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### BEVERLEY — EAST YORKSHIRE

## SYSTEMS ANALYST

**SALARY — TO £5K**

Our Client is the Computer Services Department for a large manufacturing Group offering computer facilities to subsidiary Companies throughout the UK. An IBM System 3 is located in Beverley, and System 32's will be installed at the larger manufacturing units, following the Companies distributive processing philosophy. The Company now wishes to recruit a Systems Analyst to augment a small, professional development team working on a variety of applications, including management reporting and production control.

Applicants should have:

- ★ a minimum of two years' experience in a systems role
- ★ a sound programming background — preferably, but not essentially, in RPG2

In addition, our Client offers excellent promotional opportunities throughout the Company. Above average Company benefits apply, including a contributory pension scheme, staff restaurant and recreational facilities. The offices are situated in rural surroundings within easy reach of the coast, and additionally, the location is renowned for the low price of property. Re-location expenses will be paid where applicable.

Interested candidates should contact:
SHEILA BRADBURY on: 061-833 0671

Ref: CW/12/8

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SPECIALIST COMPUTER RECRUITMENT LTD.

**BIRMINGHAM 021-236 3781 FREEPOST**
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR

**MANCHESTER 061-833 0676 FREEPOST**
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD

**LONDON 01-935 0671 FREEPOST**
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

Computing Services Association

# Senior Computer Opportunities

The National Computing Centre is an organisation financed by industry, commerce and government with a vital role to play in the promotion and development of wider and more effective computer usage throughout the United Kingdom. Our headquarters in Manchester is a modern building ideally situated for local and national transport.

We currently have the following vacancies:-

## Distributed Computing
## Up to £6500

Experienced and creative Data Processing Professionals to undertake studies which will provide information and guidance on the development of systems using data communications.

Candidates will be in the 30-40 age range, preferably with a degree or professional qualification; they will have some years experience in computing which includes the design and implementation of on-line systems, the effective use of data communications and familiarity with protocols, and applications involving mini-computers—particularly Distributed Systems

## Product Planning & Market Research
## Up to £6500

to join a small team engaged on a wide range of activities associated with product planning and research. These will range from—

1. Market Research Studies to assess needs and demands.
2. Exploiting to the greatest advantage (in the form of commercial products and services) the results of Research and Investigatory Studies carried out by NCC Technical Staff.
3. Revision of the specification and/or price of existing NCC products and services.
4. Negotiating with external organisations over agency arrangement for the purchase and/or sale of products and services

Candidates will have an extensive range of general computing experience, preferably in both a user organisation and a manufacturer/service company environment together with direct market research experience and involvement in the specification/pricing of computing products.

All posts are based in Manchester; conditions of service are excellent and include 25 days annual leave, nine statutory holidays plus contributory life assurance and pension schemes; help with re-location expenses.

Applications please—either sex—with career details stating in which post you are interested to the Personnel Manager, National Computing Centre Limited, Oxford Road, Manchester M1 7ED or telephone 061-228 6333 for application form.

**NCC**
The National Computing Centre

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**CAM** Computer Aid for Management Limited

## OPERATORS

**ARE YOU LOOKING FORWARD TO NEW YEAR?**

We are, and below is a selection of the vacancies currently available:

| Machine | Experience | Area | Salary | | Ref |
|---|---|---|---|---|---|
| Univac | 6 months Univac | City | to £3,000 | NO NIGHTS | 86 |
| IBM 370 | 18 months DOS | Middx | £3,200 | NO NIGHTS | 103 |
| IBM 370 | 2 yrs DOS | East London | c £3,600 | NO NIGHTS | 118 |
| 2903 | 6 months ICL | City | £3,000 | NO NIGHTS | 154 |
| NCR | Any NCR | North London | to £3,000 | NO NIGHTS | 196 |
| Burroughs | 1 yr. Burroughs | City | to £4,700 | NO NIGHTS | 197 |
| Honeywell | Any Honeywell | City | c £3,700 | | 122 |
| IBM 370 | 1 yr 370 | Middx | to £3,900 | | 148 |
| IBM 370 | Any DOS | Surrey | £3,500 | | 190 |
| IBM 360 | 1 yr OS | North London | to £4,100 | | 138 |
| 1000s | 2 yrs OS | S.W. | £4,100 | | 216 |
| 1904 | Any 02 or 03 | Middx | to £4,000 | | 221 |
| | 18 months 03 | West London | c £3,500 | | 230 |

**Contact KEITH JAMES**

**COMPUTER AID FOR MANAGEMENT**

32 GREAT PORTLAND STREET
(1st floor)
LONDON W1
01-637 3691

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# 1900 OPERATOR

(Ref. M29)
£3439-£3698 p.a. inclusive

If you have 12 months experience operating ICL 1900 Series Computer using magnetic tapes and discs with card and papertape input, preferably with a knowledge of GEORGE II, we would like to hear from you.

We run a communications network that you will be involved with using our 1903T and 1902A machines. A two shift system is in operation — 8.00 am to 4.00 pm and 3.30 pm to 10.30 pm for which a shift allowance is payable.

We offer 23 days holiday a year. A Season Ticket Loan Scheme is in operation and we run a subsidised canteen.

The Computer is located in a pleasant purpose built centre within two minutes of buses, trains and shops.

For further details and application form write to: Personnel and Recruitment Officer, Directorate of Management Services, London Borough of Lambeth, 17 Porden Road, Brixton Hill, London SW2 5SB, or Tel: 01-274 7722, Extns. 148/413. Closing date 19th December, 1977.

**LAMBETH**

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**COMPUTER SYSTEMS ANALYSIS COURSE**

16th January - 3rd February 1978

A 3-week course for trainee systems analysts with experience in programming or O&M or operational research. Also for user staff involved in systems analysis work within their function or in management services.

Reservations by telephone or letter to: Registrar, Urwick Management Centre, Bayile House, Stoke Poges Lane, Slough, Berks, SL1 3PF. Telephone: Slough 34111.

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# Project Managers, Designers, Senior Programmers, Specialists

Australia A$14-25,000

Dataskil is ICL Australia's software house for project & facilities management, systems & programming, and consultancy. It is three years' old and still growing fast. Several major projects in a number of centres now create opportunities for,

- Project Managers • Systems Designers
- Senior Programmers & Specialists

We are looking for experience covering some of the following areas.

- Software houses, client responsibility, profit centres.
- Land information systems, local government, commerce or manufacturing.
- Database, communications and transaction processing.
- 2900, 1900 applications and software, eg LAMIS, IPS, ACTS and COBOL.

If you are interested in rewarding career opportunities, a satisfying lifestyle and the chance to work in a high growth environment, you should arrange to meet John Offord, Manager Dataskil Australia, who will be visiting the UK from 12th-22nd December.

These are permanent appointments. Competitive salaries are offered in the range of A$14-25,000 (£8,800-£15,800) according to experience, and relocation costs for you and your family will be paid.

For further information, telephone 01-788 7272 and ask for extension 2034, or write without delay, enclosing details of experience, to Carole Hudson, ICL, Bridge House North, Putney Bridge Approach, London SW6 3JX, quoting reference CW1620.

**ICL Dataskil**
The Computer Professionals

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**STOP COMMUTING! EARN MORE!**

Thos. R. Miller & Son invite you to join their computer staff at Cockfosters, Herts.

This city-based firm, established since the late 19th century, is the largest marine insurance agency in the world

Modern in outlook, keen to develop, the firm is upgrading to a 56K 2904 to keep step with its commitment to the increased use of DP as a business tool.

**COBOL PROGRAMMERS to £5,200**

**SYSTEMS ANALYSTS to £6,000**

This is your opportunity to join a team with growing responsibility.

**Please ring 01-440 5141 or write with career details to: M. de Pace, Esq., Thos. R. Miller & Son, Northside House, Mount Pleasant, Cockfosters, Herts.**

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**CLEVELAND COUNTY COUNCIL COMPUTER SERVICES UNIT**

## SENIOR PROJECT LEADER

**£6362-£5926 (Includes supplements)**

Applicants must be able to supervise and control the work of programmer/analysts and project leaders in the development, implementation and support of computer systems—both batch and on-line. A good working knowledge of ANS COBOL, IBM OS/VSI and CICS is essential together with initiative, leadership and technical ability

The central installation comprises an IBM 370/148 A twin 370/138 configuration is on order the delivery next year. Those machines will support a sophisticated teleprocessing network servicing the requirements of four District Councils in addition to County Council Departments

This is a senior management post and as well as the usual required skills the applicant must be able to demonstrate managerial capabilities.

**Application form and detailed job specification are available from the Director of Computer Services, 5th Floor, Reds House, 67 Corporation Road, Middlesbrough, Cleveland TS1 1LY. Telephone No. Middlesbrough 248185 Ext. 2351. Closing date for completed application forms 20th December 1977.**

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## PROGRAMMER

MICRO PROCESSOR SYSTEMS Software House with branches in London and the Midlands would like to hear from Programmers with experience in COBOL BASIC RPG PL1 or Assembler Languages interested in development.

Software for an exciting new range of microprocessor systems. Freelance or permenent, short or long term contracts.

**Write in confidence to:**

**Box No. 1913, Computer Weekly**

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# Trainee DP Consultants

London based £5,000 - £6,500

The professional experience of a Management Consultant covers a wide range of problems in many types of company. Developing practical solutions for management and working with colleagues who are specialists in other disciplines, will rapidly broaden your understanding of business. A period in consultancy with one of the leading firms can help your career to general management or to specialist competence.

If you have a very good degree or the professional equivalent and between one and three years' commercial experience, we can offer a continuing training programme in DP skills, and other management techniques. Our consultants also have the opportunity to work in Europe, Africa and the Middle East and for this an additional salary is paid.

Applications, which will be treated in strict confidence, should contain relevant details of career and salary progression, age, education and qualifications. Please write to Dr. I. Bowers (ref. 66B/FY).

**Deloitte, Haskins & Sells,** Management Consultants,
P.O. Box 207, 128 Queen Victoria Street, London EC4P 4JX.

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# MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

## DEVELOP ON-LINE SKILLS
## COBOL PROGRAMMERS

**MIDDX/BERKS BORDER** **£5500**

A SENIOR PROGRAMMER is required to join a busy Programming Team developing On-Line applications for a Light Engineering Company. The Team will initially design the software architecture for their new ICL Computer; developing macros and familiarising themselves with On-Line programming techniques. Several major systems are to be developed in the coming year permitting the Senior Programmer the opportunity of designing and implementing On-Line Programs. He/she will be encouraged to develop System and Software Programming skills; or alternatively progress to a greater Analysis involvement.

Although Programmers are required at both Senior and Junior levels, our Client is keen to recruit an experienced SENIOR PROGRAMMER in the first instance with at least three years' experience using COBOL.

The Company offers a pleasant working environment with favourable terms of employment.

## BROADEN YOUR HORIZON
## SYSTEMS ANALYSTS

**Near HAMMERSMITH** **To £6250**

A major group of companies with offices throughout Europe requires two additional Systems Analysts to develop applications based at their Head Office in London.

Applicants should have a minimum of two years' experience preferably supported by a programming background. Projects include General Accounting, Stock Control and a host of unusual and interesting systems involving close user contact.

The Company has substantial contracts throughout the UK and Europe and currently has a 30% growth rate. Extremely good conditions of employment are enhanced by individual training schemes with considerable scope for advancement. Generous commencing salaries will be offered in the range £5000 to £6250 per annum.

## SENIOR ANALYST/PROGRAMMERS
## ANALYST/PROGRAMMERS

**ESSEX** **£5000-£6500**

We wish to recruit Analyst/Programmers and Senior Analyst/Programmers to work in a stimulating environment within our client's Data Processing Division.

Candidates for the positions of Analyst/Programmers will be required to have sound programming experience coupled with the ability and genuine desire to move towards analysis.

For the senior positions candidates will be able to offer in the region of two to three years' systems design/analysis experience, and will come from a programming background.

The successful applicants will take their places in a small, friendly and active department where they will have the opportunity to work on the development of a variety of interesting projects.

Salaries are negotiable but as a guideline are likely to fall into the above quoted range. They are further enhanced by a comprehensive company benefits package.

## FINANCIAL ON-LINE SYSTEMS
## SYSTEMS ANALYST

**MIDDX/BERKS BORDER** **£6000**

A Systems Analyst is required to develop On-Line Financial Systems for a busy engineering factory. The Company has recently taken delivery of a new ICL Computor and is in the process of building a small Systems Team of capable Analysts to assist with the development of an agreed Systems Plan. Reporting to the Senior Analyst, the successful applicant will take responsibility for the design and implementation of financial applications.

Applicants should have AT LEAST TWO YEARS' ANALYSIS experience and have a knowledge of Financial Systems. Although On-Line experience is not required a keen interest in computer issues is desirable. The Company offers a pleasant working environment with favourable terms of employment.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

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# Northern Star Insurance Company Ltd

**Installation IBM 370/138 Location: Central Croydon**

**THE DP DEPARTMENT**

is developing major On-Line systems using CICS/VS and DL 1.
This will involve 60 + VDU's
IBM 370/138, 2000 meg-bytes On-Line data.
The Department operates in a very dynamic environment using the lastest techniques including IPT, On-Line program development.

**SYSTEMS ANALYSTS**

Salary Circa £6000 p.a.

— around 3 years solid experience in DP
— involved in at least one major system

**PROGRAMMERS**

Salary circa £4000 - £4500 p.a.
— around 2 years sound COBOL experience.
On-Line experience, particularly in CICS would be a distinct advantage, as would an Insurance background for Analysts, but primarily we require dedicated professionals and full training will be provided.

**ANALYST/PROGRAMMER**

Salary circa £5250 - £5750 p.a.
— around 3 years COBOL/ASSEMBLER experience
— 1 year's Analysis experience
To control a small but vital team enchancing current systems.
Here is your opportunity to step into team management in an area of prime importance to the Company.

Northern Star Insurance Company is engaged in a period of controlled expansion. The offices and D.P. Accommodation are located in a prestige office block in the middle of the Whitgift Shopping Centre. Just 5 minutes walk from East and West Croydon British Rail Stations. Car Parks close by.
Working conditions are excellent; there is a non-contributory pension scheme, half yearly bonus, LVs, Staff Club and licensed bar.

If you are interested in finding out more write or phone Jean Knight at the following address.

**Northern Star Insurance Company Ltd**
Rothschild House, The Whitgift Centre, Croydon. Tel: 01 686 5678

JBA

UF

# PROGRAMMERS

## A Challenge from United Friendly

### Salaries negotiable up to £5,500

Some of the most interesting developments in Data Processing today are taking place within the Insurance Industry.

United Friendly, a London-based organisation is expanding rapidly and Management is committed to computing as the prime tool for operating and controlling the Company. They utilise two ICL System 4 computers and are about to phase-in the more powerful ICL 2960.

As a result of this expansion UF is able to offer experienced programming staff at all levels outstanding opportunities within the various Systems Development Departments. Versatility is the keynote to the success and therefore high calibre programmers are needed with experience of COBOL on either ICL System 4, IBM or ICL 2900 machines.

We are also seeking Junior programmers with one year's experience, who will receive full training in advanced programming techniques.

In addition to excellent salaries, candidates will enjoy technically rewarding projects and a pleasant working environment. Good career prospects are open to those who contribute and enhance the professional reputation and expertise of this group.

**For further information on any of the above vacancies please contact Margaret Stevens.**

**JAMES BAKER ASSOCIATES**
**International Personnel Consultants**
**16 Maddox Street, London W.1. Tel: 01-491 4478**

# Working as a Systems Analyst with American Express says more for your career than any ordinary job can

**SALARY: Circa £5,250 per annum Plus substantial mortgage subsidy; Plus non-contributory pension scheme; Plus free life assurance scheme. PLUS FULL RELOCATION EXPENSES TO BRIGHTON**

Our client is the Card Division of American Express. They are looking for a number of Systems Analysts to join them during an exciting phase of their computer expansion.
Whilst all positions are based in BRIGHTON, Sussex, a number of them cover responsibility for international systems development, and this may entail significant travel.
Successful applicants will have been working in a commercial/financial environment for between 2 and 3 years'. During that time, you will have played a significant role in the development of at least two major projects. You will have a strong belief in your ability to develop effective systems and will be able to convey this confidence to users and other members of your department.
You are probably now working in an environment which is not stretching your cababilities as much as it should, and are now looking for a challenge which will prove to you one way or the other, whether you are any good. Without any doubt, you will be ambitious and anxious to get things done quickly.
At American Express you will be given that opportunity. You will learn a great deal over the next few years, not only how to develop computer systems, but also how systems can influence business, and that is surely what systems analysis is all about.

Applicants are invited to contact John Goldsmith at the address below, or alternatively, at his home on Sunday, 11th December between 8.00 p.m. and 9.30 p.m. Telephone No. Camberley 21266. Ref. 1104.

**John Goldsmith (Computer Recruitment) Limited**
**15 Buckingham Palace Road, London, SW1**
**Telephone: 01-828 5356. 24-hour answering service**

Computing Services Association

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd., 15, Buckingham Palace Road, London, S.W.1.
Tel: 01-828 5356 – 24 hour answerphone service.

**JOHN GOLDSMITH** (Computer Recruitment) Ltd.

# PRE-SALES SUPPORT ANALYST

**A KEY ROLE**

***West Midlands*** ***Salary c£6,000 p.a. + car***

Our client, a Company dedicated to the supply of turn-key mini computer systems, are engaged in a well managed and controlled expansion plan. This has generated an exciting career opportunity for a high calibre systems individual to support the sales function.

It is essential that candidates have the presence and ability to materially influence the sales effort and construct demonstrations, systems design and sales proposals.

Candidates should have:

- ★ An in-depth disk based mini computer systems background.
- ★ A broad knowledge of commercial systems.
- ★ Pre-sales support experience, ideally gained from a manufacturer or computer systems supplier.
- ★ The ability to contribute significantly to the Company's growth.

Have you the relevant skills, and are you seeking substantial career progression?
CONTACT: CATHY TRACEY REF. NO. CW/12/11
on 021-236 3781

SPECIALIST COMPUTER RECRUITMENT LTD.
**BIRMINGHAM 021-236 3781 FREEPOST**
Freepost, Equity and Law House, 35-37 Great Charles Street Queensway, Birmingham B3 2BR
**MANCHESTER 061-833 0676 FREEPOST**
Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD
**LONDON 01-935 0671 FREEPOST 6**
Freepost 6, 102, Blandford Street, London W1E 1JZ

SCR

**The Bayerische Motoren Werke AG (BMW),** based in Munich, seeks qualified candidates for the position as

# SYSTEMS PROGRAMMER

Requirements: Substantial experience of IBM Operating System OS-MVS-JES 3 and a thorough knowledge of Assembler and/or PL/1. Your experience as a Systems Programmer should include responsibility for the design, implementation and maintenance of Operating Systems.

The BMW Data Processing Centre has presently one IBM 370/155 2 MB, one IBM 370/158 MP 8 (each processor with 4 MB), 28 Tape Drives and 76 Disk Drives plus other IBM peripherals. A real-time teleprocessing network has been gradually installed since 1973 linked to 500 TP-terminals.

Salary on appointment will be up to £15,000 p.a. according to qualifications and experience. Preferred age 25-35. Knowledge of German is desirable but not essential.

Please write, giving details of age, experience, education and salaries earned to:

**Bayerische Motoren Werke AG**
**Abteilung: PM-310**
**Postfach 40 02 40**
**D-8000 München 40**
**GERMANY**

## HOW DO YOU SCORE?

| | | |
|---|---|---|
| UART | MPU | CMOS |
| TTL | V24 | HEX |
| CCITT | ASYNC | X25 |

If these are more than just code words to you, then read on.
TRANSDATA LIMITED is an independent British Company enjoying a continued growth in both its Design and Manufacturing Divisions. We are seeking to employ SENIOR ENGINEERS to work on our expanding range of Computer Terminals and Micro Processor Systems. Vacancies exist in the following categories for people with suitable qualifications and experience.

**DESIGN ENGINEERS**
**TEST ENGINEERS**
**CUSTOMER SERVICE ENGINEERS**

The Company is located on the South Coast, close to beaches, sailing centres and other leisure facilities.

**In the first instance, write with full curriculum vitae to:**

**TRANSDATA LIMITED**
**SOLENT ROAD**
**HAVANT**
**HAMPSHIRE**

**DUNDEE COLLEGE OF TECHNOLOGY**

## Analyst/Programmer

Applications are invited from suitably experienced persons for a new post in the Computer Centre, which is responsible for all computer services in the college. There are interesting opportunities in both technical and commercial applications on the recently installed DECsystem-20. Duties will include an advisory service to users.

Salary on the scale up to £4344 with possible future advancement to a higher scale. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, Dundee, DD1 1HG, to whom completed applications should be returned by January 4, 1978.

# Do you wish to join Engineering teams whose contributions to Aerospace have established a reputation second to none?

Applications are invited for the following positions in the Research & Engineering and Quality Departments of SMITHS INDUSTRIES LIMITED. The Laboratories are situated on the fringe of the Cotswolds in beautiful rural surroundings approximately 3 miles from Cheltenham. Unless otherwise stated, minimum qualifications required are BSc, HNC or equivalent

*TEST EQUIPMENT*

**Digital Design Engineer** Ref: TE.1

For design of equipment for testing airborne units and systems, including digital computers. Minimum of 4 years design experience, 2 years of which have been in digital design. Computer programming in Machine code or Assembler language desirable.

**Analogue/Digital Engineer** Ref: TE.2

For post design/development of analogue and digital test equipment for aircraft computers and instruments. Minimum of 4 years experience of circuit design and development preferably related to avionics.

*MICROCIRCUIT TECHNOLOGY*

**Circuit Design Engineers** Ref: MT.1

For the design of L.S.I. Microcircuits. Must have digital and/or analogue circuit design experience and leadership ability. Extensive training in Microcircuit design techniques will be given where appropriate.

Amongst the benefits operated by the Company are — generous holiday entitlement, contributory Pension Scheme and Life Assurance and assistance with housing and re-location expenses, where appropriate. Write giving experience, age, present salary and quoting reference number of the vacancy to:—

*ELECTRONIC DISPLAYS*

**Software Design Engineers** Ref: ED.1

With previous experience of programming real-time mini-computers in Assembler and/or high level languages (preferably CORAL). 2 years relevant experience required.

**Digital Design Engineers** Ref: ED.2

To work on advanced airborne display projects based on real-time mini-computer systems. These positions require knowledge of computing techniques and logic design, coupled with a relevant degree and a minimum of 2 years industrial experience.

*QUALITY*

**Senior Quality Engineer (Software)** Ref: Q.1

This is a senior position within the Quality Branch for an experienced engineer to take a leading role in establishing methods of assuring quality and its control of software at all stages of design and production. Previous experience of software development on real-time systems with an appreciation of electronic design practices with some experience of quality evaluation methods is desirable. Qualification to degree standard would be expected.

H. Upson, Assistant Personnel Manager,
SMITHS INDUSTRIES LIMITED
AVIATION DIVISION
Bishops Cleeve, Cheltenham, Glos. GL52 4SF

# LET YOUR HONEYWELL and IBM EXPERIENCE TAKE YOU TO THE USA

## £11,000 – £18,000 p.a. + full benefits + travel costs

A successful, well established, international software consultancy has openings in PHOENIX, MINNEAPOLIS, NEW YORK and their WASHINGTON D.C. headquarters. These are well paid permanent jobs working on exciting, state of the art software development projects. Earnings are between £11,000 and £18,000 p.a. plus full fringe benefits and company paid travel to the U.S.

Present vacancies are for:—

### GCOS SYSTEMS PROGRAMMERS

Reqts: Depth understanding of H6000/Level 66 GCOS. Good GMAP programming experience essential. Preferably able to interpret MM dumps and work with basic I/O.

### COMMUNICATIONS PROGS.

Reqts: Depth understanding of Datanet, GRTS and H 6000/Level 66 GCOS. Good experience of design and/or support of major communications projects.

### TDS and IDS SPECIALISTS

Reqts: Depth understanding of Honeywell TDS and/or IDS. Experience of design and/or support of major database or transaction processing systems.

### PL/I PROGRAMMERS

Reqts: Good experience of PL/1 programming on large scale IBM systems. In depth knowledge of design and development of database systems.

Call today to DAVID J. HUTCHINSON on 01-499 4501. Successful applicants will be interviewed in London during December and must be able to move to the U.S. in early 1978.

REF: RW 49/1

**hutchinson-scoggins recruitment**
10 Dover Street London W1X 3PH Telephone 01-499 4501

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### PROMOTE YOURSELF FOR CHRISTMAS

### SENIOR PROGRAMMER/ANALYSTS

SALARIES TO £4,800 p.a. PLUS BONUS

Increasing demands by group users on our clients installation, based in DERBYSHIRE, necessitates the recruitment of a number of senior programmer/analysts.

The company is currently undergoing an exciting DEVELOPMENT PHASE, which will involve successful candidates in the development and implementation of totally new commercial systems; some of these ON-LINE — utilising twin IBM mainframes.

In addition you will be offered the opportunity of progressing to a SYSTEMS ANALYSIS ROLE within a short period of time.

Successful candidates will have:
* A minimum of two years' ASSEMBLER level programming experience.
* A professional and enthusiastic approach to data processing.

Excellent large company benefits apply, including an annual bonus scheme; and relocation assistance, where necessary, to this area of attractive low-cost housing.

Make a move in the right direction —

CONTACT: ROD BEESON on 021-236 3781

REF: No. CW/12/2

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# Systems Controller ~Future Development

**Starting Salary c £6,000 pa**

Grattan Warehouses Ltd., is a mail order company, employing 5,000 plus staff, based in Bradford within easy reach of the Yorkshire Dales.

Applications are invited from people wanting to take up a challenging job in the forward planning area of the Company's Computer Services Department.

**THE JOB** — Is the development and co-ordination of long term plans (up to 6 years ahead) on Systems Development, Hardware, Software, Database and Security which make the best use of computers to meet the needs of Grattan's business systems.

**THE PERSON** — You are now
— either a Systems Programmer wanting more contact with users and their applications.
— or a Systems Analyst with programming experience who wants a job with wider scope.

You should have
— Practical computing experience in a commercial company.
— Informed opinions on the future of hardware and software development commercially.
— An understanding of the importance of cost justification in computing.

**THE INSTALLATION** — By early 1978, the present ICL 1904F machines will have been joined by an IBM 370/138 and the beginnings of a network of DEC PDP11's.
— Main applications currently are order processing and agents accounting.

**HOW TO APPLY** — Ring Peter Lord at Bradford 0274-75511 (ext. 448) or write, enclosing brief career details to:

Peter Lord, Computer Manager,
(Planning and Quality),
Grattan Warehouses, Anchor House,
Ingleby Road,
BRADFORD BD99 2XG

Grattan

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### NIGHT Shift on New Year's Eve?

### Meet the New Year with CHEERS!

**OPERATORS £2,800 + S.A + BONUS**

Apply now!—You could start work for a progressive company in January. You will work on a growing Honeywell 64 site in Blackburn. 2 shifts are in force — NO NIGHTS! TP has recently been introduced and this is YOUR OPPORTUNITY TO BROADEN YOUR EXPERIENCE.

To enter into the spirit you must be an experienced operator, preferably with a Honeywell background, using GCOS or OS 2000; however any re-training will be given if necessary. You must have the ability to adapt to changing situations and capable of liaising with remote users where necessary.

Whitbread is a well established organisation and will actively offer you career development within the group. A wide range of benefits is offered with an annual bonus. For more details contact MANCHESTER, quoting ref. CW68-7M.

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COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS **CAPP ASSOCIATES** LONDON AND MANCHESTER

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**UWIST**

University College of Swansea

Applications are invited for two vacancies in the Computer Centre

### SHIFT LEADER

The Shift Leader is responsible for the work of a team operating an ICL 1904S, with extensive links to departments and other computer centres on a 24-hour, 5 days a week three-shift cycle. Applicants should preferably have at least three years experience of computer operating and some supervisory experience. A knowledge of George 3 would be an advantage.

### SENIOR COMPUTER OPERATOR

The Senior Computer Operator will work under the direction of a Shift Leader on the ICL 1904S. Applicants should have a minimum of two years' operating experience.

The salary scales will be as follows, plus a shift allowance of £370 per annum for both posts

Shift Leader £3169-£3698

Senior Computer Operator £2800-£3434 per annum

Further particulars and application forms (two copies) may be obtained from the Personnel Officer, University College of Swansea, Singleton Park, Swansea, SA2 8PP, to whom they should be returned by Tuesday December 20, 1977

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University of Bradford

### ASSISTANT COMPUTER OFFICER/ COMPUTER OFFICER

Applications are invited from graduates or professionally qualified people for an appointment in the Data Processing Division of the Bursar's Department. The duties will involve systems analysis and programming in administrative routines in the Finance, Registration and Library Divisions/Departments, and applicants should have practical experience of COBOL with a 2904 ICL installation. Salary is on a scale £2904-£4190 per annum (Assistant Computer Officer) or £2904-£4811 per annum (Computer Officer). Application forms are available from the Personnel Office, Room E47, University Main Building, Richmond Road, Bradford 7. Telephone Bradford 33466 ext. 252. Please quote reference BD/OPR/ACO/CO/CW

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### SHIFT LEADER

DOS GRASP
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**ADP**

# VISIT THE U.S.A.

**RELOCATION EXPENSES PAID INCLUDING ROUND TRIP AIR FARE.**

**EXCELLENT U.S. SALARIES.**

ADP (Automatic Data Processing) Financial Services are looking for PROGRAMMER/ANALYSTS to spend 1-2 years in our Company.

ADP are the largest independent supplier of D.P. Services in the World (Sales over $200m) and have over 65 IBM computers throughout the U.S.A.

If you have BAL (user code) or COBOL – 360/70 (System 4) we can offer you a variety of challenging assignments giving you a good opportunity to gain valuables practical experience and training as well as an opportunity to see the country.

If you are interested then ring MIKE STARR - 01-262 6737 or write to him at:

**Royal Lancaster Hotel**
**London W2 2TY**

He can then arrange an informal interview with members of our technical staff. (Your interview expenses reimbursed).

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# Computer Applications Engineer

North Sea Oil and Gas production

to work for a major oilfield Operator on the introduction of computerised systems covering aspects of North Sea Oil and Gas producing platforms.

The duties of the job will be to take a co-ordinating role in the operational aspects of new computer systems controlling the production and flow of oil and gas from offshore to terminals in Shetland and North East Scotland.

Applicants should hold a degree in Engineering Science or at least a National Certificate and have had related experience on the application of computer systems in an oil or process control industry.

The position is primarily shore based with occasional visits to offshore platforms for which additional allowances are paid. The successful candidate will be required to live in the Aberdeen area. Generous re-location expenses will therefore be paid, if necessary.

The salary will be negotiable within the range £5,000 to £7,000 p.a., subject to qualifications and experience. Usual large company benefits apply.

Please write with full details. These will be forwarded direct to our client. List separately any companies to whom your application should not be sent. Ref. FY.1736.

*This appointment is open to men and women.*

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# Engineering Software Production

## New opportunities at Newcastle-under-Lyme and Bracknell

Customer Engineering Division in ICL is creating a new team of experienced software producers in New Products Engineering.

We need management and programming men and women with experience in the production of effective software to tight timescales. You will provide our customer engineers with software tools to improve the cost-effectiveness of our maintenance services.

You should preferably have a 1900 software background and be:

- Self-motivated and results-oriented.
- Able to take responsibility for all aspects of program production from formulation of a specification through design, coding, testing and documentation.
- Articulate and able to communicate with engineers as well as software staff.
- Keen to establish a personal reputation for meeting time and quality targets for software production.

ICL is British-owned and Europe's leading computer manufacturer successfully marketing a range of systems in over 70 territories worldwide. The Company sells systems to Industry, Commerce, Research Establishments, Universities and Governments.

Specifically we have the following opportunities in Engineering Software Production:

**Production Manager**
**Newcastle-under-Lyme £6000–£7500**
You will lead the programming teams in meeting agreed quality and timescale targets, head negotiations for the agreement of specifications and co-ordinate the activities which lead to enthusiastic use of the test programs by Customer Engineers.
Technical competence is a pre-requisite, and the ability to motivate highly skilled staff in a challenging environment is essential. (Ref CW1621A).

**Planning Engineer**
**Newcastle-under-Lyme £5500–£6500**
You will assist the Production Manager in preparing plans, monitor their progress, identify potential shortfalls, and take corrective action where necessary.
For the unit to meet its targets, you will also ensure computer resources and supporting services are readily available round the clock. (Ref CW1621B).

**Analysts/Programmers**
**Newcastle-under-Lyme & Bracknell £5000–£6000**
Small teams will work on each major application. They will produce an overall system design, then detailed program specifications. The programs will be written, tested and documented by the team, ready for validation and issue to the field.
In addition to experience of software development using PLAN under Operators Executive and George operating systems, some experience of 1900 Executive mode working would be useful (Ref CW1621C).
Assistance with relocation expenses can be given where appropriate. For further details telephone Ray Sayers on Newcastle-under-Lyme (0782) 610131. Alternatively write for an application form to A E Turner, International Computers Ltd, 85/91 Upper Richmond Road, Putney, London SW15, quoting appropriate reference.

**International Computers** ICL

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# SENIOR SYSTEMS ANALYSTS SYSTEMS ANALYSTS COMPUTER PROGRAMMERS

We are looking for the above personnel to join teams involved in the design and implementation of Data Based/Data Communication Systems at Coventry, using data collection into IBM 370/135 and IBM 370/158 Computers.

Ideally we would like to hear from people with a minimum of two years experience within a Production/Finance Systems environment, and who hold H.N.C., H.N.D, or Degree in this field, but experienced people with lesser qualifications should not be deterred from applying.

These positions offer attractive salaries, conditions and benefits, together with excellent opportunities to gain valuable experience within a progressional computer function.

For further details, please telephone or write to:
N.G. Smith (Mrs.), Personnel Officer, Rolls-Royce Limited, Aero Division, Parkside, Coventry Tel: (0203) 27666 Ext. 335.

ROLLS ROYCE

**ROLLS ROYCE LIMITED Aero Division**

**£6,000+ ANALYST/PROGRAMMER London EC**
The successful applicant must have fluent RPG, if possible COBOL too, for this position with an IBM S3 user shortly upgrading to Univac mainframe. Must be capable of team work and liaison with management at all levels.

**£6,000 + car + Comm. SALES Bristol**
Leading small computer manufacturer requires a person able to exploit previous computer industry experience selling highly successful range

**£5,500 SENIOR PROGRAMMER London, SW**
We are looking for someone with 3 or 4 years IBM COBOL for our client's 360. DOS converting to OS.

*Many more unadvertised positions*

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COMPUTECH 01-794 0202

**IMPERIAL COLLEGE COMPUTER CENTRE**

**SYSTEMS PROGRAMMER**

The College Computer Centre is one of the largest university computer centres in the country with an extensive communications network and range of facilities for the support of scientific research and higher education. The system is based on two large CDC mainframes with an assortment of peripheral devices, mini and micro processors servicing several hundreds of terminals, graphic displays and mini computers in departments and other institutions in the University of London.

A vacancy exists in the quality assurance group for a systems programmer to assist in the maintenance and enhancement of the current operating system and the implementation of future operating systems. The work also involves evaluation of systems performance

The applicant should be a graduate with some statistical background and Fortran programming experience

Salary in the range £2804-£4190 p.a. (under review), plus £450 London allowance, depending on age and experience

Apply with curriculum vitae to:
**The Director of Computing Services**
**Imperial College Computer Centre**
**Exhibition Road, London SW7 2BX**

**SURREY HEATH BOROUGH COUNCIL**

## Systems Analyst

**(S01) £4879-£5185 p.a. incl. supplements**

This vacancy has arisen due to the promotion of the previous post holder to C.M.

Applicants, male or female, must have successfully designed and implemented at least one major computer system, preferably within a Local Authority. Ability to communicate effectively at all levels and capacity to work on own initiative, yet as part of a team, essential.

Experience in RPG II programming is required.

Post ranks second in the computer section of this progressive Authority with a programme of new and revised systems to be designed.

The Borough's computer installation is situated in Financial Services, Camberley, and consists of an ICL 2903/30, 24K with EDS 30's and FEDS.

Temporary housing accommodation may be available in approved circumstances. Application form, job description and details of fringe benefits from the Personnel Office, Bagshot Manor, Green Lane, Bagshot, Surrey GU19 5NN. Telephone: Bagshot 72324—Ext. 31. Closing date for receipt of applications 28th December, 1977.

**UNIVERSITY OF WARWICK**

**Research Posts**
**SRC Distributed Computing Project**

Applications are invited for two posts to work on an SRC funded project for the design and construction of an integrated hardware/software system for distributed computing. A Postdoctoral Research Fellow (who should have substantial software and some hardware experience) is required to work particularly on the design of microprocessor communications systems, together with an Experimental Officer who will work with the Research Fellow on the production of the hardware components. The posts will be for three years in the first instance with the possibility of renewal under the SRC Special Grants procedure. Appointment will be on the lower part of the Range IA scale (£3,333 + £214 — £5,627 p.a. for the Research Fellow, and on the Range IB scale £2,804-£3,333 for the Experimental Officer (salary scales under review). Further details are available from Dr. C. Whitby-Strevens. Telephone 0203 24011, ext. 2363. Application forms from the Academic Registrar, University of Warwick, Coventry CV4 7AL, quoting Ref. No. 18/R/77. Closing date for receipt of applications 3rd January, 1978.

**KENT**

## SYSTEMS TROUBLESHOOTER

**Commencing Salary to £6,250**

We have been asked to identify a troubleshooter who would thrive on a challenge involving not only hardware and software, but the co-ordination of technical teams.

Our clients, leaders in their area of the communications market, are in the process of a Major Development Phase to provide D.P. systems supporting their new products.

Your role would be to:

- ★ investigate, propose, design and implement these D.P. support systems
- ★ interface with software and hardware groups to control the cost and timing of the projects

Essentially, you will have:

- ★ 3 years' systems analysis experience
- ★ implemented one manufacturing system
- ★ the self-motivation and effective communication needed when dealing with management and technicians alike

This position is seen as a genuine step towards a junior management function with the department.

CONTACT: DAVE SCARLETT on:
01-935 0671 REF: CW/12/13

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# REMEMBER TOMORROW'S WORLD?

***If you have potential sales ability— You can help build it***

## STAFF ENGINEERS (Trainee Sales)

## SALARIES £4,500-£5,000 P.A. + PROFIT SHARING

This forward thinking U.S. Mini/Midi computer manufacturer, a market leader in its field, wishes to recruit intelligent young people with SALES potential to give vital technical support to an existing professional sales force based in MANCHESTER and WOKINGHAM, whilst undergoing extensive product and sales training. Successful candidates will have:

- ★ Obtained a degree in computer science, electronic engineering, or relevant numerate subject.
- ★ Gained a couple of years' experience in any field of commerce or industry.
- ★ Preferably, but not essentially, have studied for commercial or business qualifications.
- ★ The personality and self motivation required to succeed in a sales environment.

It is envisaged that these positions will progress to fully-fledged sales role within an acceptable time scale.
Terms and conditions of employment are well above average, and include non-contributory pension scheme, profit sharing, and a truly excellent relocation package.
If you have the necessary skills and qualifications, and can accept the challenge of this rare opportunity:

CONTACT: DALE HADLEY 021-236 3781 REF. NO. CW/12/9

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## datascene

**SENIOR PROGRAMMERS**

***If you're looking for £5750 pa you should be in an institution***

One of the jobs we have on board this week is for a Senior Programmer needed by a famous institute based in the West End of London. The hardware used is an IBM 370/165, operated under O/S. If you have around 3-4 years' allied experience on IBM 360/370 coupled with a thorough knowledge of COBOL you can expect a starting salary of up to £5750 p.a. and benefits which include a season ticket loan, subsidised restaurant, pension scheme and half price BUPA.

This is just one of our current vacancies for Programmers at all levels. So if you want to start the New Year right,

**Ring Phil Gascoigne today!**

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Sceptre House
169-173 Regent Street, London W1R 7FB
**01-439 7871**
24-hour answering service

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**SYSTEMS PROGRAMMERS to £6000 pa**

***Okay, so you're like gold dust!***

We know it, and you know it. But does your company know it? We have two jobs here that will reflect your true value. Both offer real career prospects, both are based in the West End of London.

The first is with a Software House operating an IBM system under DOS. A knowledge of OS would be acceptable. You should be familiar with CICS or TP Monitors, and a background in high level language is preferred.

The second is with a national Retail Chain, operating an IBM 370/145 system under DOS/VS, using POWER, GRASP and IMS Database. If you have around 3 years' experience of ASSEMBLER, call us!

We have many other Systems Programming jobs on board, offering salaries ranging from £3750 to £7000.

**So ring Phil Gascoigne today!**

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Sceptre House
169-173 Regent Street, London W1R 7FB
**01-439 7871**
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**SENIOR PROGRAMMERS Minis & Maxis**

***Give yourself a Christmas present of £7000 pa!***

Some of the presents under our tree include Senior Programming jobs with salaries just like that!

They're with users and software houses all over London and the Home Counties, interested in people with a knowledge of FORTRAN, ASSEMBLER or BASIC used in Commercial or Technical applications.

Apart from some very interesting salaries, bonuses range from free lunches to cheap mortgages.

To find out more, talk to the fairy at the top of our Christmas Tree.

**Ring Sally Durben today!**

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| HONEYWELL | ANY | S. LONDON | OP | 1 yr | £3600 |
| DEC PDP | ANY | LONDON—DAYS | OP | 6 mths | £3000 |
| MINI-COMP | ANY | CITY—5-11 pm | | 6 mths | £3000 |
| IBM | DOS | WEST END | OP | 6 mths | £2950 |
| IBM | DOS | MIDDX | OP | 6 mths | £3200 |
| ICL | MAN/GII | MIDDX | OP | 6 mths | £3200+ |
| ICL | MAN/GII | WEST END | OP | 6 mths | £3000+ |

### SENIOR OPS/MANAGERS

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| BURROUGHS | MCP | CITY | SNR OPS | 1½ yrs + | £4200 |
| UNIVAC | ANY | W. LONDON | SNR OPS | 1½ yrs + | £4000 |
| HONEYWELL | ANY | LONDON | OPS | 1 yr + | £4000 |
| IBM | DOS | MIDDX | OP | 1 yr + | £4500 |
| IBM | DOS | WEST END | SNR OP | 1½ yrs + | £4500 |
| ICL | MAN/GII | CITY | SNR OP | 1 yr + | £4000 |
| ICL | GII | W. LONDON | ASST MGR | 4 yrs + | £5500 |
| ANY | ANY | W. LONDON | D/O MGR | 4 yrs + | £6500 |

***AND MANY, MANY, MORE!***

# HERTFORDSHIRE

***Project Leader Opportunities***

## SMALL BUSINESS SYSTEMS SUPPLIER

**circa £6,000**

For Senior Programmers with the ability to manage small Design Teams, this represents an exceptional opportunity for career progression.
Our Client's highly successful range of computer systems have earned him increasing acceptance in both the technical and commercial markets. Volume of sales has created requirements for additional software expertise in the following areas:

### *PRODUCT SOFTWARE DEVELOPMENT*

Product developments include:

- ★ operating systems software and languages.
- ★ telecommunications and transaction processing software, including the use of microprocessors.

Your responsibilities would require, in any of the above areas:

- ★ the creative flair in software understanding and development.

### *SPECIAL CUSTOMER APPLICATIONS*

This team provides tailored software solutions ranging from enhancements of software packages to major turn-key systems.

Skills demanded include:

- ★ the creative ability expected in a software development team.
- ★ the personal skills to succeed in communicating with customers in pre- and post-sales situations.
- ★ a sound hardware know-how.

Both of the above positions offer early management opportunities of larger teams as the Company continues its market penetration.

CONTACT: DAVE SCARLETT on:
01-935 0671 REF: CW/12/10

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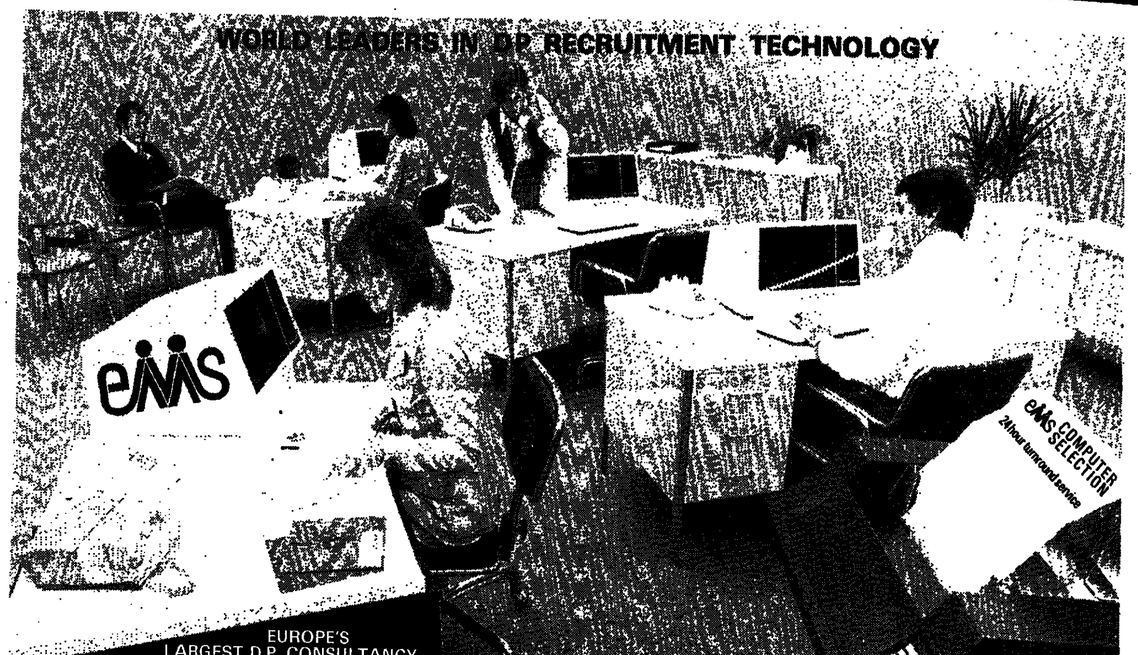


## Project Leaders/ Analysts and Progs. North West To £6500

**IMS, PL/1 ENGINEERING AND MANUFACTURING SYSTEMS**

EMS currently have large requirements for experienced IBM IMS and PL1 staff in the N.W. Region to join either our own established consulting group on secondment to the clients or to be recruited to work for the client organisation directly. Applications projects will include goods receiving, process planning, stores control, etc. Analysts with a knowledge of DBOMP would be especially useful. For initial discussions, complete the attached application form and forward it to EMS without delay.
Consultant: John Wood.

## IBM Programmers Derby To £4500

Our clients require a number of additional Programmers and Programmer/Analysts to work in small project teams split, each team 50% development, 50% maintenance. Projects generally are commercial batch work, Payroll, Accounts, Sales, Stores, etc. Language experience should be ASSEMBLER, COBOL or PL/1. Some on-line development is envisaged within the next 2 years.
Consultant: Selina Mills.

## Analysts and Progs. London £3500 to £6500

EMS are currently and constantly inundated with thousands of vacancies for experienced DP staff to work in the London or Home Counties area. All ranges of hardware are included. Wide choice of commercial or industrial installations exist at present, we are placing virtually every analyst or programmer who applies to us for vacancies within this region in only a few days. We offer you a vast choice of vacancies, salary advice if required and early results. Apply to us today and you will have your first list of potential interviews telephoned through during the following week for you to decide which you prefer.
Consultant: Selina Mills.

## ICL Analysts and Progs. Hundreds U.K. £3500 to £6000

Vacancies exist in every major town and city throughout the U.K. for experienced ICL DP staff. Clients include banks, bureaux, chemical manufacturing, distributors, engineers and manufacturing. We currently have hundreds of positions outstanding just waiting for you personally to complete our application form to enable us to rapidly provide you with a wide range of attractive opportunities. We could place a third of the entire industry in new positions if sufficient profiles were completed. Let EMS get results for you.
Consultant: Don Walklate/Selina Mills.

## Leading Vacancies Middlesex To £6500

Project Leaders, Senior Analysts, Analysts, Program Designers, Chief Programmers and Programmers.
Opportunities exist with a large group, substantially increasing their investment in modern, sophisticated hardware, for a wide range of experienced DP staff. Experience in the following areas is urgently required: Production Control, On-line/Real time Systems, Database development, general commercial Accounting and Sales Order Processing, down to COBOL programming. Opportunities not to be missed in the Middlesex area.
Consultant: Selina Mills/Carol Proudman.

## IBM Analyst Manchester To £4800

Good commercial experience in an IBM environment is sought. Ideally applicants should have worked at least 2 years in a similar position. The group have an international clientele and supply engineering products to a large consumer market.
Consultant: Don Walklate.

## Marketing Support Consultants To £6000 +

Candidates educated to minimum HNC level are required by the EMS group to assist with the marketing of Honeywell Level 6 Mini Computer Systems, ICL 2900 Series timesharing and general package development/sales. Ability to function as a junior business analyst will be important to rapidly identify and propose relevant solutions to client problems. Equally duties will include assisting with the recruitment of resources division support staff to cope with the rapid development of the EMS Group. Ability to present reports and recommendations at director level will assist all applicants. For further job specifications contact: John Wood.

## ICL 1900 COBOL Programmers West Country To £5000

A small Gloucestershire bureau has vacancies for additional programmers to assist with developing client accounts. Candidates will be given appropriate applications training where necessary. Opportunities exist for both Junior and Senior staff working in a very popular location with good middle term career prospects.
Consultant: John Wood.

## Systems Programmers, Systems Designers, Systems Engineers London To £5300

A large banking group have numerous vacancies for staff experienced in DOS/VS, ASSEMBLER or COBOL and possibly CICS. A minimum 2 years' IBM 370 experience is essential. Equally, relevant staff with experience of financial system or banking would be of special interest. Excellent working conditions are available at a convenient City location.
Consultant: Selina Mills.

## Systems Analysts West Midlands To £4400

Preference will be for candidates educated to at least HND level. The main activities of systems development include investigation of existing systems and assessment of future requirements. Preparation of initial reports and agreements with users. Preparation of individual program specifications including test data. Systems testing and Parallel/Pilot running and compilation of time schedules which must be adhered to.
Consultant: John Wood.

## IBM 370 PL/1 Analysts/ Programmers Lancashire To £7000

Any experience of IMS would be especially welcomed. We have urgent, large scale requirements for a leading industrial group about to embark upon a major systems development exercise. Experience of working in a manufacturing industry would be advantageous. Staff will be expected to work in large project teams, involving tight schedule controls. Opportunities also exist for travelling throughout the U.K. to other group sites if required during latter 1978. Attractive salaries will be paid to a wide range of applications and software support staff with 2 years' and more practical experience.
Consultant: Niall Bradley.

EMS Consultants Ltd.
61-63 Lower Street
Newcastle-under-Lyme
Staffs ST5 2RS
Telephone 0782 623665
(10 lines)

Register NOW!

## Recruitment Consultants To £6,000 Birmingham

EMS need additional experienced business Analysts, or even current Recruitment Consultants to assist with the rapid expansion of our sophisticated recruitment facility within the new Birmingham Data Centre. Facilities are available which are unrivalled elsewhere throughout Europe.

We seek smart, businesslike Analysts capable of rapidly assessing a candidate's true depth of experience and formulating clear concise reports for client presentation. Equally, applications should show commercial aptitude for customer negotiations and presentation of company services at managerial, or on occasions, board level. Sound opportunities exist for career development and adequate reward following successful services marketing. Without doubt, these positions, with the U.K.'s foremost consultancy, offer prospects unrivalled elsewhere and the degree of job security unlikely to be rivalled during our constant sales expansion projects.
Consultant: John Wood

## Turnkey Systems Salesmen Various UK £10,000-£15,000 earnings

EMS has just embarked upon a major new diversification with a £2-£3m capital investment project, starting initially with a large sophisticated Data Centre just opening in Birmingham with additional regional centres to open throughout the U.K. during the next 2 years. Each centre has large hardware development and demonstration areas and numerous software/applications systems development areas. EMS initially will be embarking on a dual system approach marketing both Honeywell Level 6 and ICL 7502's linked to our own mainframes. Equally, substantial investment in package development has been initiated, with teams already at work on a wide range of applications projects. We urgently seek only experienced salesmen capable of working on the promotion of hardware and software systems, with an adequate knowledge of application requirements. EMS have a specialist division dedicated to customer support able to take a large amount of conventional software assessment away from salesmen enabling them to substantially increase their marketing availability. We envisage highly motivated salesmen being of sufficient calibre to present equipment to seminars of clients numbering up to 100 as well as to negotiate without support on occasions at client board level. Earnings should be very attractive for experienced salesmen.
Consultant: John Wood.

## Diagnostic Programmer Surrey c. £5000

Applicants should be educated to minimum "A" level with at least four years' ASSEMBLER programming experience. A knowledge of Minis is desirable. The company will also consider programmers with an engineering background wishing to switch to software development. Liaison will be involved with Engineering, R & D and Support Services. Mainly, you would be working within the software services group without supervision, problem solving, programming maintaining existing diagnostic suites, writing new suites and installing new equipment, providing full documentation and operating instructions for all activities.
Consultant: Don Walklate.

## Senior Programmer IBM Surrey To £5300

Experience of COBOL or ASSEMBLER (DOS) in a commercial environment, with sufficient experience to assist with the training and supervision of junior staff. In addition, duties will incorporate the maintenance of existing programs, the writing of new programs and modification of existing programs. Within a year, the opportunity will be available to assist with Systems Design and Analysis. Relocation assistance considered where appropriate.
Consultant: Niall Bradley.

## 6 Programmers IBM London (City) To £6250

Our clients, a major banking bureau, require COBOL or ASSEMBLER Programmers with OS commercial applications experience. COBOL Programmers will join a team providing a networking distribution and sales information system service. ASSEMBLER Programmers will either join a team developing an on-line stockbroking system, or a large payroll team with over 1,000 UK clients.
Consultant: Selina Mills.

## Analyst Peterborough To £5700

Preference will be given for IBM hardware knowledge although other machines will be considered. Equally, the company will consider senior programmers seeking the opportunity of transferring to systems work. Systems staff are split into two project teams of approximately five members each. Successful applicants will join one of these two teams and will assist the Project Managers and Senior Analysts in all phases of systems development in a commercial/financial environment.
Consultant: Selina Mills.

## PDP-11 Senior Progs Middx. To £7000

ASSEMBLER language experience is essential under DOS. Programmers will be responsible for software and assist with hardware tasks. The company, a turnkey systems group, build mini systems for the insurance industry and maintain hardware and software thereafter. Systems include dual processors, big discs, VDUs and printers. Software includes own high level language, considerable development potential but more geared towards hardware then applications Experience of installing turnkey systems would be especially advantageous.
Consultant: Don Walklate.

## Systems Software Engineer Middx To £4500

Mini programmers with CORAL 66 or ASSEMBLER experience in communications or Process Control in a real time environment. You will become a member of a multi-discipline team controlling the design, production and commissioning of a Flight Information System. The major responsibility will be in integration and testing the software for 5 linked Argus 700 E's and numerous micro-processor based display controllers, liaising with a number of external contractors. Some program writing may be required, but most important is the understanding of the software problems of real time mini-systems.
Consultant: Niall Bradley.

## ICL Chief Programmer Hants To £6250

Adequate previous experience of ICL 1900 Series is essential, including GEORGE II and COBOL/PLAN. Applications experience should incorporate Sales/Purchase Ledger Accounting and Stock Control. Equally, any involvement with Filetab, Driver/Comms Manager or MAXIMOP would be especially advantageous. Primary duties will be to lead, guide and supervise a small team of 4 Programmers, assist with planning and implementing on-line programs; development system VIDEMAC Package under Comms Manager, in addition, the successful candidate will re-define installation standards and advise on staff developments and training.
Consultant: Anne Tyler.

## Programmer Beds. To £4000

Manufacturing or Accounting experience, using PL/1/ASSEMBLER on IBM hardware is desired operating under DOS. DBOMP knowledge would be advantageous. Duties will incorporate writing, testing and modifying programming and documentation standards.
Consultant: Carol Proudman.

## Applications & Package Development — Birmingham To £5,500 +

EMS urgently require experienced Analysts and Programmers to assist with both sophisticated on-line package development and custom-built systems working to agreed time scales. Subsequently, we need experienced staff with a sound commercial or industrial background, able to develop applications systems in Stock Control, Production Control, Sales Order Processing, Accounting Ledger Systems, etc. Equally, we need senior staff capable of assisting with the training of user staff on occasions and project leading custom built systems. Teams will handle up to 4 different Turnkey Systems each at any moment in time, ensuring substantial job interest. Sound career prospects are available with working and environment unlikely to be matched elsewhere throughout the U.K.
Consultant: Denis Filby.

## Asst. Support Managers c £6,000 + allowances

Large scale expansion within the EMS group and considerable diversification in new, high growth areas, now necessitates the company providing additional support in the areas of resources and resources control for our heavily overloaded Divisional Managers. Applicants should be aged 28-40 with a sound experience of systems and programming, having managerial abilities and seeking the opportunity of a sound career path within a multi-product service group with a track record second to none.

Duties will vary between Recruitment and Selection of new personnel for the EMS Divisional Consulting Support Groups to assisting clients' staff up and maintain adequate installation capacity. Equally, duties will incorporate periodic visits to clients' sites assessing staff productivity and adherence to targets. Equally periodic assistance supporting turnkey systems sales teams will be necessary, projecting systems development and programming projections, costing up project tasks and providing Divisional Managers with detailed reports for use in often substantial contract tenders.

Ability to liaise with and motivate field staff will be important, as will the ability to discuss client software problems in depth and advise accordingly. Training will be given to assess mini computer configurations and cost projections. Again, ability to present client systems requirements and package solutions, or individual systems alternatives at division level, or board room level will be important. Candidates should be educated to HNC/Degree level and maintain a sound businesslike appearance commensurate with a managerial support role. Both positions will be based in the Midlands but involving extensive UK support.
Consultants: Denis Filby/Niall Bradley.

## IBM Analysts Herts. To £6000

Opportunities are available for a large number of additional Analysts, with a minimum two years' experience, to join a major distribution company which is a market leader in its own right. Analysts should have applications experience in areas such as Accounting, Sales, Order Processing, Purchasing Systems, Cash flow monitoring, stock recording, forecasting, etc. Equally, any experience of conversion from large scale ICL to IBM would be especially valuable. Ability to function as a team member or even team leader under pressure conditions is sought as is a commitment to ensure that priority projects are completed on time. Sound career prospects are available for motivated, professional staff. Assistance given with relocation where appropriate.
Consultant: John Wood.

## ICL Senior Programmer Glasgow To £5300

Opportunities now exist to join a large engineering company using COBOL & PLAN under GEORGE II.

Applications will include Accounting, Production and Stock Control, etc. Any knowledge of COMMS MANAGER or DRIVER would be especially advantageous as would previous on-line experience. Preference will be for HND-Degree in Maths or Computing Science. Relocation assistance given where appropriate.
Consultant: Don Walklate.

## Systems Software Manager Herts To £7500

We envisage applicants being aged 26-35 of smart, businesslike appearance. Essentially he/she will have five years' high and low level programming experience and considerable knowledge of systems software development. He/she must have successfully led/managed a systems software development team involved in interface disc based mini computer operating systems.

The ability to liaise with sales staff and customer management throughout the U.K. will be desirable. Ability to work methodically under pressure will be expected and to lead others. Equally, you should be able to assess existing support software and make recommendations on future development policy. Candidates should have a current driving licence and be a car owner. All aspiring Managers must be prepared to work outside normal business hours to meet the demands of the job and travel to customer sites and branch offices throughout the U.K. giving advice and diagnosing systems software problems.
Consultant: John Wood.

EMS Consultants Ltd
EMS Consultants Ltd
61-63 Lower Street
Newcastle-under-Lyme
Staffs ST5 2RS
Telephone 0782 623665
(10 lines)

Register NOW!

**EMS**

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STAFFORDSHIRE, ST5 2RS
Telex. 36636

Management Services & Computing Division
Telephone: 0782 623665/6/7/8
Employment Agency & Employment Business Licence No. AM5

For Office Use only

Company Ref. No

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Other Names
Address — Telephone: Home / Bus. / Ext.
Post Code

| Age | Date of Birth | Place of Birth | Nationality | Height | Weight |
|---|---|---|---|---|---|
| | | | | | |

| Married | Children | Car Owner | Driver | Nature of any Serious Illness |
|---|---|---|---|---|
| | | | | |

Position Required — Required Salary Range
Present Position — Salary

WHERE DO YOU WISH TO WORK

| Within U.K. | Yes/No | Acceptable Areas | Abroad | Yes/No |
|---|---|---|---|---|
| Will you move | Yes/No | | Europe | Yes/No |
| | | | Middle East | Yes/No |

NUMBER OF YEARS EXPERIENCE

| Operating | Programming | Systems Design | Systems Analysis | Management | Total |
|---|---|---|---|---|---|
| | | | | | |

Available for Interviews
Available for Employment

DETAILS OF SECONDARY AND FURTHER EDUCATION

| Schools | Date | Examinations Passed |
|---|---|---|
| College/University | Date | Examinations Passed |

Business Courses with Dates

Reason for Seeking Change

Details of type of position wanted

Additional Information—
Please explain below, in an 8–10 line précis, your current duties and applications experience

FOREIGN LANGUAGES

| Spoken | Written | Read |
|---|---|---|
| | | |

Please show the number of years experience of the following. Where your experience is not specified please use the blank spaces.

| HARDWARE | | OPERATING SYSTEM | | LANGUAGES | | PACKAGES/SOFTWARE | |
|---|---|---|---|---|---|---|---|
| IBM 360/370 | | DOS | | COBOL | | FILETAB | |
| ICL 1900 | | OS | | FORTRAN | | DRIVER | |
| ICL 2960/2970 | | MVT/MFT | | ASSEMBLER | | CICS | |
| ICL 2903 | | GEORGE 1 | | PLAN | | IMS | |
| UNIVAC 1100 | | GEORGE 2 | | PL1 | | BOMP | |
| UNIVAC other | | GEORGE 3 | | RPG 2 | | D BOMP | |
| BURROUGH 700/800 | | MCP | | USERCODE | | PERT | |
| BURROUGHS other | | Exec 8 | | AUTOCODE | | V SAM | |
| HONEYWELL 66 | | GCOS | | EASYCODER | | IDS/TDS | |
| HONEYWELL 6000 | | OS 2000/200 | | ALGOL | | MICROFILMING | |
| HONEYWELL other | | VMEB/VMEK | | NEAT | | TELEPROCESSING | |
| NCR | | J Level | | CORAL | | DMS | |
| ICL System 4 | | | | DL1 | | | |
| PDP | | | | | | | |

1. Present Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

| Commercial | | Bureau | | Insurance | | Scientific | |
|---|---|---|---|---|---|---|---|
| Manufacturing | | Banking | | Education | | Engineering | |

| HARDWARE | OPERATING SYSTEM | LANGUAGES |
|---|---|---|
| | | |

Software or Packages

| On-Line | | Real Time | | Time Sharing | |
|---|---|---|---|---|---|
| R.J.E. | | Tele Processing | | Data Base | |

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN (Please Tick)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cost Accounting | | General Ledger | | Manpower Planning | | Personnel | |
| Budgeting | | Credit Control | | Stock Control | | Payroll | |
| Forecasting | | Order Processing | | Production Control | | O.R. | |
| Corporate Planning | | Marketing | | Petrochemicals | | Radar | |
| Sales Ledger | | Distribution | | Linear Programming | | Statistics | |
| Purchase Ledger | | Traffic Analysis | | Simulation | | | |

Projects Completed — Responsibilities

2. Previous Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

| Commercial | | Bureau | | Insurance | | Scientific | |
|---|---|---|---|---|---|---|---|
| Manufacturing | | Banking | | Education | | Engineering | |

| HARDWARE | OPERATING SYSTEM | LANGUAGES |
|---|---|---|
| | | |

Software or Packages

| On-Line | | Real Time | | Time Sharing | |
|---|---|---|---|---|---|
| R.J.E. | | Tele Processing | | Data Base | |

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cost Accounting | | General Ledger | | Manpower Planning | | Personnel | |
| Budgeting | | Credit Control | | Stock Control | | Payroll | |
| Forecasting | | Order Processing | | Production Control | | O.R. | |
| Corporate Planning | | Marketing | | Petrochemicals | | Radar | |
| Sales Ledger | | Distribution | | Linear Programming | | Statistics | |
| Purchase Ledger | | Traffic Analysis | | Simulation | | | |

Projects Completed — Responsibilities

3. Past Employer — Town
Position — Date Joined

TYPE OF INSTALLATION

| Commercial | | Bureau | | Insurance | | Scientific | |
|---|---|---|---|---|---|---|---|
| Manufacturing | | Banking | | Education | | Engineering | |

| HARDWARE | OPERATING SYSTEM | LANGUAGES |
|---|---|---|
| | | |

Software or Packages

| On-Line | | Real Time | | Time Sharing | |
|---|---|---|---|---|---|
| R.J.E. | | Tele Processing | | Data Base | |

APPLICATION AREAS YOU HAVE BEEN INVOLVED IN

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cost Accounting | | General Ledger | | Manpower Planning | | Personnel | |
| Budgeting | | Credit Control | | Stock Control | | Payroll | |
| Forecasting | | Order Processing | | Production Control | | O.R. | |
| Corporate Planning | | Marketing | | Petrochemicals | | Radar | |
| Sales Ledger | | Distribution | | Linear Programming | | Statistics | |
| Purchase Ledger | | Traffic Analysis | | Simulation | | | |

Projects Completed — Responsibilities

PLEASE CHECK THAT EACH SECTION HAS BEEN TICKED APPROPRIATELY

ADDITIONAL INFORMATION
General
Data Processing
Terminals
Software/Packages
Application Areas
Projects and Responsibilities





# MERRY XMAS AND

## Time Sharing Programmers to £6,000

C. LONDON

If you have had time sharing experience involving the use of FORTRAN, BASIC or ASSEMBLER then we have four nationally known companies who would offer you an exciting job in pre- or post sales support. Some offer generous bonus schemes. CW 49/1 Michael.

## Systems Consultants £6,000-£9,500

CENTRAL LONDON

Seven large well established consultancies wish to recruit systems people with all round experience on third generation equipment and the right personality to deal with clients who require a first rate service. Technical communications consultants are also required where in depth implementation experience of IBM or ICL 1 P message switching networks etc. are essential. Excellent fringe benefits and prospects. CW 49/2 Michael.

## Mini Computer Programmers to £6,950

U.K.

Your experience is required now. A very large number of vacancies are registered where a knowledge of Assembler or communications experience is essential (VRC programmers would also be considered). Opportunities exist in S.W., N.W. or W. London, Surrey, Herts and Manchester in this exciting and rewarding field. There has also been registered some overseas posts to people with 5 or more years in mini computers. CW 49/3 Michael.

## RPG II Programmers £4,000-£6,500+

LONDON & H. COUNTIES

We now have eight commercial companies who have vacancies for RPG II programmers and Analyst Programmers. Jobs exist in C. London, W. London, Middx, High Wycombe, Croydon and in Dorset. Most firms offer LV's, 4 weeks holiday, etc. CW 49/4 Annette.

## Operators to Shift Leaders £2,000-£4,000 (incl.)

LONDON & HOME COUNTIES

We have many vacancies covering all types of machines and locations. Some firms will retrain from one manufacturer to another. Remember these positions are for shift working only. Hurry whilst stocks last. CW 49/5 Patricia.

## Technical Authors W. London & Herts. £5,000

Four manufacturing companies are looking for competent technical writers with mini or mainframe experience. CW 49/6 Michael.

## Successful Salesmen to £12K quota earnings

U.K.

We now have ten different firms for both hardware and systems only companies who are anxious to meet successful salesmen in this industry. They must have previous relevant small systems experience (some VRCs will be considered). All firms have bonus schemes and cars or car allowance. Most positions in S.E. England but 2 in Midlands. CW 49/7 Michael.

## Contract Programmers to £240 p.w. U.K.

Immediate requirements for IBM RPG II & IBM COBOL under DOS or OS for C. London, PL 1, OS or CICS, PDP 11 or good IMS for various locations for three months plus. Also IBM vacancies in Europe. Ask for the Contracts Officer on 01-995 2238.

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CW 49/8

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# MIDLANDS

## SALARY TO £6,300 P.A. + EXCELLENT FRINGE BENEFITS

# BUSINESS ANALYST PLANNING CO-ORDINATOR

Our client, a major force in the exporting market, are seeking to augment their existing expertise by the appointment of a Business Analyst to contribute to their future development plans.

The successful applicant would be required to identify systems requirements, support agreed company business objectives, and be prepared to travel, on occasions, throughout the world. Moreover, a distinct advantage would be the ability to assess systems priorities and the capability to review technological developments and ensure the relevant techniques are incorporated in the systems plans.

To qualify for this position you should:—

* have a minimum of five years' systems experience, including two years in a supervisory capacity
* be educated to degree standard or possess an equivalent professional qualification
* have the ability to communicate effectively at senior management level
* have sound commercial/industrial background.

Interested candidates who have a genuine desire to accept the challenge of this thoroughly stimulating position should in the first instance contact:—

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Computing Services Association

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# ata Computer Recruitment

## STEP INTO MANAGEMENT

## SOUTH YORKSHIRE

### c£5000 + RELOCATION ASSISTANCE

Our clients are a Manufacturing Company in Fast Moving Consumer Goods with many of their products household names.

The newly formed Computer Section will develop Manufacturing Systems with Inventory Control/Production Planning taking priority, followed by Product Costing. This will of course involve close liaison with various in-house User Departments.

Reporting directly to the Financial Director the successful applicant's responsibilities will be

Systems design and implementation

RPG II Programming

Supervision of the Computer Installation and the Operations Staff

All Housekeeping duties associated with an efficient D.P. Section

Candidates should have a minimum of three years' Analysis and Programming (RPG II) experience preferably within a manufacturing environment. They should also have the confidence to successfully shoulder management responsibilities in addition to the role of Analyst/Programmer.

For further details telephone the Manchester Office 061-832 5856 or alternatively write enclosing curriculum vitae to **ATA Computer Recruitment, Anglia House, Cross Street, MANCHESTER M2 4LA.**



# . . . A HAPPY NEW JOB!

## Operators Nr. Hounslow To £4,000 inc.

Several vacancies exist for normal three shift working for ICL. Gift people. Canteen, four weeks hols. Flexitime etc. Nice company. CW 49/9, Patricia.

## Operator N. London to £3,800 inc.

If you have large IBM experience apply now. OS HASP would be ideal. Lots of perks including four weeks hols, three shift system. CW 49/10, Patricia.

## Operator Nr. Maidstone c. £4,000

A famous high street organisation requires an operator with sound IBM DOS/VS experience. Company discounts etc., two shift system. CW 49/11, Patricia.

## Two Senior Analysts City £6,500 to £8,000

You must have five years DP experience and be a really competent commercial IBM systems analyst. It would be nice to have COBOL DOS as part of your background and the ability to manage large systems. Challenging position. CW 49/12, Annette.

## Systems Analyst Sierra Leone £10K

An opening exists for minimum one year in WEST AFRICA for and analyst with 1 or 2 years systems experience. It is essential that the applicant also has O & M in their background and an added plus is knowing the IBM System/3. Single people would be preferred. A house servant will be provided. CW 49/13, Annette.

## New Sales Support & Sales Posts—UK

A major International computer manufacturer is announcing in Europe an exciting proven range of small computers in the New Year. They therefore immediately require experienced Systems Analysts, Salesmen and Technical Support Personnel as well as UK Training Officer. Previous experience should be with RPGII type computers or mini computers using commercial skills with a professional approach to problem solving. Personnel will have a marvellous opportunity to get in on the ground floor where salaries will be very competitive. Vacancies exist in W. LONDON, BIRMINGHAM, MANCHESTER and LEEDS. CW 49/14, Michael.

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**01-995 3883 or**
**01-958 6138 evenings**

## Programmers Hemel Hempstead c. £5,000

Are there any of you who have commercial FORTRAN … this multinational firm in Herts … lunches and non C.P.S. … be ideal but other machines acceptable. C.W. 49/15, A…

## Senior Programmer SW1 to £7,500

A very successful commercial service bureau … computer, needs an experienced COBOL programmer … than the average ability … CW 49/16.

# ajk

### Sales Executive

If you have a proven sales record and can display some knowledge of computer terminals, printers or floppy disk systems, our clients will be very interested in hearing from you. Generous terms are offered and one salesman is expected to be promoted to sales manager within 12 months.

**London** **£5000 + Comm. + Car**

### Computer Programmers

Our clients urgently require Programmers with a knowledge of PL1 or Assembler. Real-Time experience would be an advantage but training will be provided. The successful candidate will be trained as an Analyst and work within an IBM installation. Applications are financial and there will be some contact with the various users.

**London** **£6000**

### Analyst/Programmers

Senior Analyst/Programmers are required immediately to work within an IBM environment. A sound knowledge of Fortran must be displayed and any experience of the petro-chemical industry would be an advantage. Our clients are a very large organisation and have recently moved into new offices.

**Middlesex** **£5500**

### Senior Systems Analysts

If you have 2 years' systems analysis experience using Honeywell 66 computers our clients would like to see you. They are a very large and well-known company and the numerous benefits are far in excess of those normally offered by other companies. The successful candidate will be treated as a Manager and will be expected to supervise and direct other systems analysts, in an on-line database environment.

**Middlesex** **£6700**

*Telephone or write quoting the appropriate reference.*

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**SLOUGH COLLEGE OF HIGHER EDUCATION**

## PROGRAMMER

Required in the computing unit at Slough College of Higher Education. The work involves programming in various languages using standard software and also advising staff and students. Knowledge of ICL 1900 series would be an advantage.

Please send a stamp, addressed envelope for further details and an application form to:
**Chief Administrative Officer**
**Slough College of Higher Education**
**Wellington Street**
**Slough SL1 1YG**

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**CONTRACT ANALYST/PROGS. INTEL ASSEMBLER**
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**UNIVERSITY OF LEICESTER MEDICAL SCHOOL**

## COMPUTER OFFICER

Applications are invited for the post of Computer Officer. This is a joint appointment between the Departments of Community Health and Psychiatry, and the successful applicant will be responsible to the Senior Lecturer in Biostatistics. Initially the duties will be mainly concerned with the provision of a service to research workers engaged in medical surveys, but it is envisaged that the person appointed will contribute to the planning of computing facilities in this new and growing medical school.

Applicants should be expert in Fortran and should preferably have experience of survey analysis and statistical software. Previous experience of biomedical applications would be an advantage. Salary on academic related scale £2904-£4811 (under review) and candidates would normally be expected to have a relevant degree.

Further particulars from the Registrar, The University, University Road, Leicester LE1 7RH, to whom applications should be sent on the form provided by 2 January, 1978.
28.11.77.

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# ajk

### Shift Leader

IBM 370/DOS, POWER, CICS experience. Self motivation and an ability to work by oneself are important qualifications. Two shift systems.
**E.C.3**
**to £4700**

### Junior Operator

Six months + experience of IBM 370 DOS/VS. Excellent promotion prospects. Free meals. Two shift system.
**N.W.10**
**£3300 aae**

### Shift Leader

City Insurance Company require a Shift Leader with 3 years' ICL 1900 GII experience. Two shift system.
**E.C.4**
**£4100**

### Three Operators

Operators with 18 months-2 years IBM DOS/VS/POWER/VS experience. A good knowledge of DOS JCL. This company give a bi-annual bonus. Three shift system.
**West London**
**£3800**

### Senior Operator

One years' experience on Univac 9400 or two years' IBM experience. Staff discounts, LV's, three shift system.
**West London**
**£3750**

### Operator

An International Bank require an NCR Century Operator with a least 19 months' experience. Three shift system.
**Central London**
**£NEG aae**

### Operator

Company require an operator with twelve months' experience of ICL 1900 GII. Four shift system.
**E.C.1**
**£3000+ aae**

### Shift Leader

At least 3 years' IBM 360/370 OS/MVT HASP experience. Someone who already holds a Shift Leader post, age 25+. Three shift system.
**Middlesex**
**£5000**

*Above are just a selection of vacancies we have available*

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The Company is part of a broad-based U.K. Public Group and operates specifically within the Communications sphere. The growth of the Company has been dramatic, hence the requirement for Sales Executives based in the North and Midlands.

The market area is every Computer User with data transmission facilities and the products include a comprehensive range of MODEMS, LINE DRIVERS and DATA NETWORK CONTROLLERS. In addition to the End User Market their products are utilized by O.E.M. Companies, including the majority of Mainframe and Mini manufacturers.

It is envisaged that the successful applicants will be able to demonstrate proven track records in D.P. Sales; preferably in telecommunications. An engineering aptitude would also be an advantage.

The remuneration package is as follows:

1) High basic salary + negotiable guarantee
2) Commission on all sales
3) Company car and expenses

The attainment of the realistic quotas will produce earnings of £12,000 per annum.

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**BRISTOL (0272) 211035** Equity and Law Building, 36/38 Baldwin St., BS1 1NR
**EDINBURGH (031) 226 5381** Anglia House, 24/26 Frederick St., EH2 2JR
**CRAWLEY (0293) 514071** 36 The Broadway

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**BIRMINGHAM COMPUTER CENTRE SYSTEMS GROUP –**

## COMPUTER OFFICERS

The Computer Centre already provides a wide range of local and remote computing facilities to the University. These are now being further extended by the installation of a large dedicated interactive system for both teaching and research and also by participation in the development of the Midlands Universities Computing Network.

The Systems Group at the Centre will be actively involved in all aspects of these developments. Applications are invited for two posts of Computer Officer in this Group. Applicants should have several years experience in systems software and/or hardware in a service environment, as shown by the successful completion of several projects. Expertise in graphics or in data communications would be advantageous, but other areas of specialisation may be considered. A higher degree is desirable, but clear evidence of previous work successfully completed is equally important.

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Further information from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, to whom applications (three copies) including full curriculum vitae and naming 3 referees should be sent by 16th December 1977.

Please quote Ref. CW22

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**Reference: CW/112/1**

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### NORTH-WEST EUROPE/U.K.

### SALARY UP TO £7,500

The successful candidate will be responsible to co-ordinate the development, the operation and the maintenance of a MIS system to support the Corporation's Management and Administration operation.

He/she will direct a staff of systems support specialists and operational staff within the United Kingdom and North-West Europe supporting the computerised information system. His/her main tasks will be as follows:

* To direct development activities, programming and testing the on-going maintenance and enhancements to MIS.
* To support the MIS planning, policy making and administration.
* Analyse work requirements, plan the structure and scope of staff within the Corporate policies and objectives.
* Formulate plans to management for investment and expenditure.
* Direct and train staff in accordance with approved plans.
* Control his/her operation to adhere to plan and budget.

The ideal candidate will have had at least 5 years in data processing, including 2 years' programming experience in COBOL in a large scale development project and have effectively managed professional staff. He/she should have had experience in working within a user department in the design, development and installation of application systems.

## DATA PROCESSING INSTALLATION SUPERVISOR U.K.

### SALARY UP TO £6,500

Reporting to the Management Information Systems Manager he/she will be responsible for the planning, organising and control of all computer, unit record, data entry and telecommunications equipment. He/she will be responsible for assigning personnel and supervise the library activities, production control procedures, operating standards and data preparation activities. In particular his/her tasks will be:

* Operate the hardware/software of the installation to support MIS.
* Train personnel on all equipment.
* Liaise with MIS systems support specialists in the installation of new procedures.
* Establish program and tape library facilities.
* Provide inventory of computer supplies and materials.
* Schedule computer operations and workload.
* Security of data and materials.
* Supervise and control data entry staff.

He/she should have a minimum of 3 years in a computer operations environment, preferably using telecommunications. He/she must be capable of recognising, working out solutions for operational problems and the supervision of staff is most important.

These are ideal opportunities to join a fast growing organisation within the U.K. Interested applicants should telephone the Advising Consultant and interviews will be arranged as soon as possible.

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The Whittaker Corp of the U.S.A. is operating a Health Services Project for the Saudi Arabian Government which includes hospitals in Jeddah, Tabuk and Khamis Mushayt. Due to the expansion of the project and the resulting requirements for additional computer systems, vacancies have recently arisen in the Jeddah Data Centre for:

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A minimum of two years experience in systems plus two years programming is required. Practical experience of IBM 360 or 370 under DOS is essential and some knowledge of RPG II or BAL would be useful. The work will be initially on Supply, Finance and Employee-related systems.

**RPG II Programmers** **To £8,070 (U.S. $14,000) P.A. Tax Free**
A minimum of two years programming experience is required using RPG II on IBM equipment. Knowledge of DOS/VS POWER is desirable and some experience with another programming language would be considered an advantage.

The initial contract is for a two-year period and applicants must be single, or married with no children. The contract includes free accommodation, six weeks vacation each year, free medical care and a contract completion bonus of one month's salary.

The successful candidates will have the opportunity to save a considerable sum of money, whilst enjoying the outdoor activities in the sunny climate of a stable Middle Eastern country.

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The equipment, to be installed shortly, will be an IBM 3790 using VDUs on line to the host 370/148 which is remotely located at the Group's headquarters in Basingstoke.

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**Telephone: Huntingdon 75351**

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Contract terms include airfares and housing allowance. Maximum tax is 15% of salary.

Interviews will be held in London, December 13-20.

Write immediately to Box 1912, Computer Weekly, London, or telephone now to Mr. C. Haldenby at the Comberland Hotel, Marble Arch.

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AP

**AUSTIN & PICKERSGILL LIMITED**
require a

# PROGRAMMER/ANALYST

Due to expansion of systems within the company we require a senior person with at least four years' programming experience in a commercial and technical environment. Applicants should have a knowledge of COBOL and FORTRAN and be capable of working on their own initiative.

Salary will be commensurate with experience and responsibilities.

Please write in the first instance for an application form to:

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Background of the applicants must include either sales, marketing or product development experience in the computer peripherals industries. In addition, he should have sound experience in negotiating sales with both end users and OEM's.

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The company have ambitious business expansion plans and the U.K. Sales Manager can look forward to good career progression in an ambitious and highly motivated company.

To arrange an interview, write or telephone immediately quoting Ref. CW165.

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Excellent fringe benefits.

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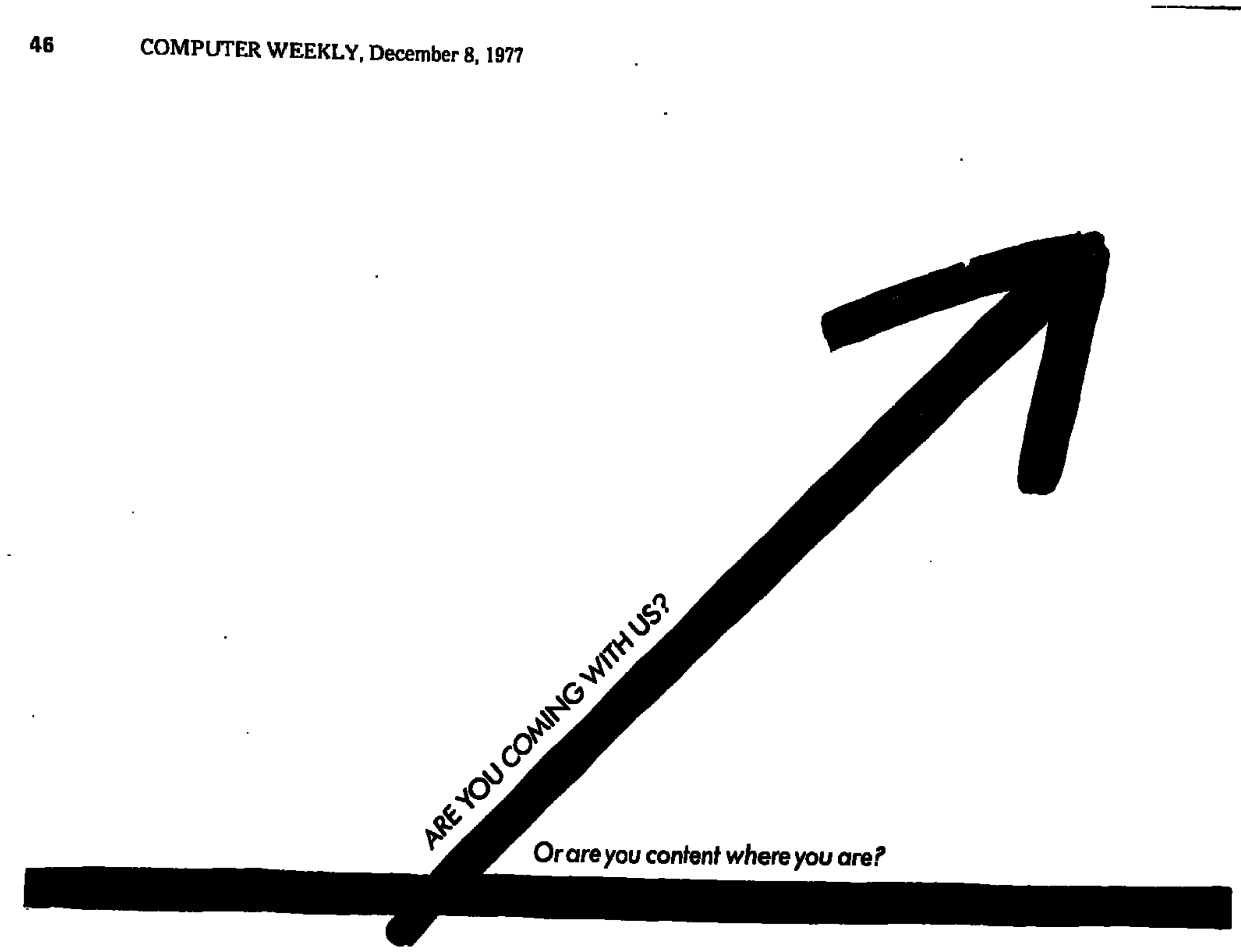


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UNIVERSITY OF LONDON
MANAGEMENT SYSTEMS DIVISION

## SENIOR SYSTEMS ANALYST

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The appointment would be on a University Administrative salary scale ranging from £4,211 per annum to £7,108 inclusive of London Allowance. Further particulars and application form are available from Mrs. T. Cos[illegible], Personnel Section, University of London, Senate House, London WC1E 7HU. (Telephone 01-636 8000, extension 15.) Applications should arrive not later than 23 December, 1977.

STERLING

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Applications are invited from persons up to the age of 30 years with at least one year's experience as a commercial systems analyst. An attractive salary will be negotiated and benefits include four weeks annual holidays after one year's service and a pension scheme.

For an application form, telephone or write to Mr J. W. H[illegible], our Recruitment Officer, Sterling Cable Company Limited, Bath Road, Aldermaston, Reading RG7 [illegible]. Tel. Woolhampton 3221

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## Analysts £4000-£5800
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Herts/Bucks border

Our client has plans to introduce some really advanced equipment and techniques which will revolutionise his data processing in the near future. Those mean great career prospects for you if you join now, so call us and we will tell you about them and how you could fit in.

Our client will give you all the advanced courses and training you may need to keep you really up-to-date. After all, it is in his own best interest as well as yours.

If you live locally you will save on commuter fares (not a small consideration nowadays) and if you don't, you can count on some sympathetic relocation assistance. The company also offers a package of worthwhile fringe benefits.

### Systems Analysts

We don't mind what your computer systems background is providing that you have a good analytical ability and an agreeable personality. For the senior posts, we'll be looking for leadership qualities and at the analyst level you will score points if you have had some programming experience.

### Programmers

At the senior levels you must have a knowledge of PLAN and you should be ready to assume a leadership position. You will also know COBOL although not necessarily ICL. At the junior levels you should have some COBOL experience and be prepared to retrain to ICL if necessary. These positions will appeal to bright young people who see programming as an apprenticeship to systems analysis.

To apply for any of these positions please telephone or send your c.v. to:

**Castle Computer Services Limited**
271 High Street, Berkhamsted, Herts, HP4 1BW
Phone. (04427) 73151

NUNEATON BOROUGH COUNCIL
TREASURER'S DEPARTMENT

## COMPUTER MANAGER

**POST F.60**
**Salary Grade PO 1 (3-7) — £4,992-£5,677**
**Plus Supplements £520 approximately**

RE-ADVERTISEMENT

This is a challenging position for someone to play an important part in the future development of the Council's computer facilities, which includes — the Council's existing tape based ICL 1901 being replaced by a mixed tape/disc UNIVAC 90/25 configuration with machine delivery scheduled for February 1978 and completed systems transfer scheduled for September 1978.

The successful applicant should be able to demonstrate proven management ability, experience of both ICL and UNIVAC machine environments, experience and knowledge of PLAN, COBOL, and other suitable programming languages. Experience of disc and tape based systems, communications and the conversion of systems to high level language is required.

**Application forms and further information are available from the Personnel and Management Services Officer, Chief Executive's Department, Council House, Coton Road, Nuneaton, Warwickshire, CV11 5AA. Telephone Nuneaton 326211, Extension 133.**

**Closing date for applications is the 3rd January, 1978.**

**Previous applicants need not re-apply.**

NUNEATON

Arun District Council

## Systems Analyst

**c. £5300** **South Coast**

Opportunity with a progressive local authority on the Sussex Coast for an experienced analyst to join our computer team.

We operate a Honeywell 62/40 mixed disc, tape and cassette. The analyst will lead major projects. He/she should have a background in Cobol and a knowledge of GCOS or similar.

Generous relocation expenses scheme and temporary accommodation considered.

Ring for details and an application form, Manpower Officer, Littlehampton 6133 Extn. 316, [illegible] Council Offices, Littlehampton, Sussex [illegible].

Closing date: 4th January, 1978.

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**in computer and microprocessor systems technology**

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Initial salaries will range between £4,000 and £6,500 depending on experience and qualifications – degree level being desirable but not essential. Generous relocation assistance will be offered where appropriate. We want to hear from men and women.

**ELECTRONIC DESIGNERS**
With a knowledge of state-of-the-art electronic equipment; to make a positive contribution to both system design and the detailed design of computer equipment.

**REAL TIME PROGRAMMERS**
With a successful record in implementing hardware oriented software such as real time control or diagnostics; to design and implement programs, data structures and software/hardware interfaces.

**Informal Interviews**

*Come and meet us over a drink or a coffee at The Portland Hotel, 3½ Portland Street, Piccadilly, Manchester, on Thursday 15 December between 9 a.m. and 9 p.m.*

*We look forward to seeing you.*

If you are unable to come to The Portland Hotel, make an appointment with Bob Wooding on Liverpool 228 4830 between 9 a.m. and 5 p.m. on weekdays.

PLESSEY

## COMPUTER NETWORKS
## DISTRIBUTED DATABASE
## INTERACTIVE SYSTEMS
## CAREER PROGRESSION

If these topics are of interest and assuming that you already have some systems or programming experience, then we would be pleased to discuss our plans more fully with you and the opportunities available in the salary ranges to £6,000.

### INFORMAL INTERVIEWS

**will be held at: Grosvenor Hotel, Buckingham Palace Road, London S.W.1**
**13th December, 1977 (10.00 a.m. through 7.00 p.m.)**

If you are unable to attend please telephone or write to Mr. H. N. Wilkinson, Management Services Manager, for further details or an appointment.

The company is the admitted world leader in its product range, holding four Queen's Awards to Industry and £100 million group turnover.

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required to write Software Manuals. Experience in Fortran or Cobol.

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£6 per hour

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0252-41576

M.R.C. CLINICAL RESEARCH CENTRE
(Northwick Park Hospital)
Watford Road, Harrow, Middx. HA1 3UJ

## RESEARCH OFFICER

required in the division of computing and statistics for the maintenance and enhancement of service computing routines and tackling and advising on problems presented by users. This requires an ability to analyse a problem, work independently and communicate effectively with the user. Salary within the range £3144-£4290 p.a. plus pay supplements.

Further details and application form obtainable from Mrs. J. Tucker-Bull. Please quote ref. 109/2/4082.



THE SALES BIT

# Steps to take to secure right job

AS long as your application form states you are a salesman, and you are warm and walking, there is a selling job for you somewhere in the computer industry.

As a salesman myself, I suppose, I ought to be pleased to be in a sellers' market, but in fact I find the situation rather depressing. It is good to know that we are in a business which is growing at a tremendous rate, but unfortunately this rapid expansion also enables the computer industry to sustain more than its share of inadequate products, incompetent people and deficient companies.

It does seem more than a little unfair, with national unemployment at its highest level for decades, that the computer industry should constantly have more selling jobs than salesmen to fill them, and also offer rewards which are excessive in comparison with those paid to technical salesmen within most other areas of British industry.

But this article is about the salesman's angle, so as things stand at present there is every reason for him, or even her, to be cheerful. However, it is just as easy to choose the wrong job in a sellers' market as in a buyers'; so let's talk about some of the problems and opportunities involved and the steps which one ought to take in order to secure the right kind of selling job.

The first step is deciding where to start looking. Advertisements are one obvious source. In my experience, the Sunday Times, the Daily Telegraph and Computer Weekly cover almost all of the jobs which are promoted in this manner. There are also many recruitment agencies which offer services for job location, but you need to be careful which one you choose. Very few "body-shops" have sufficient experience of sales and marketing to really understand the requirements of the individual and relate them to the right job opportunity.

So, how do you identify the right one? There are two possible steps you can take.

Firstly, ask someone who is likely to know which are the well informed agencies, and save yourself the trouble of carrying out your own evaluations.

Secondly, take a positive approach to every recruitment consultant you meet, and question them on their knowledge of the computer industry marketplace, the basic requirement of salesmen and the nature of the selling process.

Ask them about their senior management contacts and some of their past successes. Then see if they can evaluate your career to date and advise you on the best alternatives for your future career.

I can assure you that in this type of conversational environment your instincts will soon tell you the difference between professional sales and marketing recruitment consultants and "CV shufflers".

Having found reasonable access to opportunities of further employment, the next question is what sort of job should one be seeking?

Here are some of the questions the intending employee should ask:

1 What sort of job, with which kind of company, will enhance my curriculum vitae the most, should I eventually wish to seek a subsequent selling job – ie, will the job I am considering augment my career pattern?
2 Can I be absolutely confident that the company I am about to join will still be in business in five years' time, by virtue of both financial stability and significant ongoing investment in new product development?
3 Could I work happily and effectively with the person who is to be my direct superior? (Try your own reference checks!)
4 Are the targets I will be set really achievable?
5 What is the real min/max range of income potential, with what guarantees, in the first full year of employment?

Of course there is one much more important set of questions you should ask yourself, before starting to look around and certainly before finally accepting a new job offer.

Have I really exhausted the opportunities with my present employer? What is my present income really worth compared with the "jam tomorrow" of the new job? Have I really completed the job I set out to do?

Better the devil you know!

***TRADER***

# *Text edit terminal*

A FULL feature edit terminal and a Burroughs TD-800 compatible polling terminal have been introduced by the Electronic Engineering Company of California, USA.

The former, named D300, comes with a 12-inch diagonal screen with a 6.5 x 8.4 inch wide display showing 24 lines of 80 characters each formed from a 5 x 9 dot matrix. The character set comprises 128 upper and lower case ASCII characters.

The keyboard can be detached and comes with a 15-key numeric keypad, 16 special function keys (or 32 if the shift is used), plus the normal typewriter or teletype layout.

Modes of operation include block or conversational roll over page, and text editing is helped with an insert mode that allows the operator to insert character strings. Up to 56 different operations on the D300 can be controlled by a remote CPU. It costs $1,845 (£990) in quantities of 25.

The TD-800 compatible terminal, named D400, comes with the features of the D300 plus TD-800 features that include specific polling, specific select, broadcast select and fast select — all in Burroughs mode.

Electronic Engineering Company of California, 1,441 East Chestnut Avenue, Santa Ana, California, 92701, USA. Tel: (714) 835 6000.

*Puzzle answer*

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